



CONSULTANCY
ARBORICULTURE
PLANT PATHOLOGY

ARBORICULTURAL IMPACT ASSESSMENT
&
TREE PROTECTION SPECIFICATION

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SITE ADDRESS | Upgrade to Dundas Public School
PREPARED FOR | School Infrastructure NSW
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1.0 EXECUTIVE SUMMARY |

- 1.1 This Arboricultural Impact Assessment & Tree Protection Specification has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the upgrade of the Dundas Public School (DPS) (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP and in consideration of the stakeholder and community participation plan.
- 1.2 The proposed activity is for upgrades to the existing DPS at 85 Kissing Point Road, Dundas NSW 2117 (the site). The proposed activity involves upgrades to the existing DPS, including the following:
- Creation of 6 new teaching spaces and 2 learning commons in a single-story building
 - Installation of covered walkways connecting the new building to the existing school network
 - Landscaping and external works around the new building and eastern entry
 - Upgrades to site infrastructure and services to support the new building
- 1.3 A total of forty-seven (47) trees were assessed that were a mix of Australian native and exotic species. All trees were located on adjacent properties and were assigned Retention Values of *Priority for Retention*.
- 1.4 The supplied plans show no works are proposed within the TPZs of Trees 21, 22, 23, 28, 32, 33,34,35, 53,57, 58, 60,62, 64, 66, 67,71, 86, 92,101 & 104. However, the tree protection measures outlined in this report should be implemented to avoid indirect impacts. Mitigation measures are provided in Section 4 and Appendix 11.
- 1.5 The proposed works represent a *Minor Encroachment* (as defined by AS4970) on Trees 24-26,29,30,59,84 & 87. A minor encroachment is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ, as in the current cases. Further, the tree protection measures outlined in this report will reduce the likelihood of negative impacts on Trees 24-26,29,30,59,84 & 87 and they can be retained.
- 1.6 The proposed works are within the TPZs of Trees 27,63,72,73 & 85 and represent a *Major Encroachment* (as defined by AS4970). However, the tree sensitive construction and mitigation methods detailed in this report will allow the retention of Trees 27,63,72,73 & 85 and is considered acceptable under the Australian Standard AS4970, Clause 3.3.4.
- 1.7 The proposed works are also within the TPZs and SRZs of Trees 13,14,20,31,36 ,42,56,61,68,69,102 & 103. However, these trees will need to be removed as the TPZ/SRZ encroachment is too large for their long-term viability, based on a consideration of their health, structure and the size of the encroachment. These trees were all assigned Low to Moderate Landscape Significance Values except for Trees 31 & 56, which was assigned a High Landscape Significance Values. Refer to Appendix 6 for further detail.
- 1.8 The Construction Management Plan was provided in draft format only and the location and construction of temporary fencing and buildings should be reviewed by the Project Arborist to minimise indirect impacts on the tree population.

2.0 INTRODUCTION |

2.1 Background

- 2.1.1 This Arboricultural Impact Assessment & Tree Protection Specification has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the upgrade of the Dundas Public School (DPS) (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP and in consideration of the stakeholder and community participation plan.
- 2.1.2 The proposed activity is for upgrades to the existing DPS at 85 Kissing Point Road, Dundas NSW 2117 (the site).
- 2.1.3 In preparing this report, the author is aware of and has considered the objectives of Parramatta Council's *Parramatta's Part 5.3.4 (Tree and Vegetation Preservation) of Parramatta Development Control Plan (DCP) 2023*, *Australian Standard 4970 Protection of Trees on Development Sites (2009)*, *Australian Standard 4373 Pruning of Amenity Trees (2007)* and *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)*.
- 2.1.4 Further methodology used in the preparation of this report is detailed in Appendix 1.
- 2.1.5 This Arboricultural Impact Assessment was based on an assessment of the following supplied documentation/plans only (Appendix 4):

- Detail and Level Survey of Part Lot 3 in DP610 Prepared by SDG Pty Ltd. Dated 16.09.2024.
- Ground Floor Plan Prepared by Fulton Trotter Architects. Dated 07.02.2025
- Tree Removal Plan Prepared by Fulton Trotter Architects. Dated 07.02.2025
- Erosion and Sediment Control Plan Prepared by Meinhardt Infrastructure and Environment Pty Ltd. 31.01.2025
- Bulk Earthworks Plan Prepared by Meinhardt Infrastructure and Environment Pty Ltd. 19.02.2025
- Civil Siteworks Plan Prepared by Meinhardt Infrastructure and Environment Pty Ltd. 19.02.2025
- Electrical Services Plan Prepared by NDY. Dated 14.02.2025
- Hydraulic Services Proposed Site Plan Prepared by ACOR Consultants Pty Ltd. Dated 18.02.2025
- Landscape Plan Prepared by Ground ink Landscape Architects Dated 12.02.2025
- Preliminary Construction Management Plan Prepared by RP Infrastructure. Dated 20.02.2025
- Upgrade to Dundas Public School. Standard wording and Reporting Requirements Prepared by Gyde Preamble Dated October 2024

2.2 Proposed Activity Description

- 2.2.1 The proposed activity involves upgrades to the existing DPS, including the following:
- Creation of 6 new teaching spaces and 2 learning commons in a single-story building
 - Installation of covered walkways connecting the new building to the existing school network
 - Landscaping and external works around the new building and eastern entry
 - Upgrades to site infrastructure and services to support the new building.
- 2.3 The intent of the activity is to increase the number of permanent teaching spaces (PTS) from 9 to 15 and students from 331 to 391.
- 2.4 The supplied plans show the construction of a proposed teaching building with veranda and proposed ramp with a covered walkway with associated concrete area and works at Dundas Public School.

3.0 RESULTS |

3.1 The Site

- 3.1.1 DPS is located at 85 Kissing Point Road, Dundas. The school site is bound by Kissing Point Road to the north and Calder Road to the south. Kenworthy Street is located parallel to the site to the east as is Saint Andrews Street to the west. The site has an area of 1.99 ha and comprises 1 allotment legally known as Lot 3 DP 610.

- 3.1.2 The site currently comprises an existing co-education primary (K-6) public school with 9 permanent buildings, 6 demountable structures (1 demountable includes 2 classrooms), interconnected covered walkways, play areas, on-grade parking, sports court and green spaces with mature trees.
- 3.1.3 Majority of the buildings are 1 storey with only one 2-storey building being Building A (Admin/staff hub and amenities building). Buildings are clustered to the north of the site, with the southern part comprising of a large play area/informal sports oval and a sports court

3.2 The Trees

- 3.2.1 A Visual Tree Assessment (VTA) (Mattheck & Breloer, 2003) has been undertaken on trees growing within the site to determine their health and structural condition (Appendix 2). A full VTA of trees located outside of the site boundaries was not undertaken due to limited access. The species and trunk diameter were recorded for the purposes of determining Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) calculations only. The distance of each tree from the site boundary is an approximation due to limited access.
- 3.2.2 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) Clause 2.3.2, requires the allocation of a Tree Retention Value. This value is based on the Useful Life Expectancy (ULE) and Landscape Significance, which considers the tree's health, structural condition and site suitability. The Retention Value does not consider any proposed development works and is not a schedule for tree retention or removal. The trees have been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

- 3.2.3 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) also requires the calculation of the Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) for each tree (Appendix 1).
- 3.2.4 A total of forty-six (46) trees and group trees were assessed which were a mix of Australian native and exotic species.
- 3.2.5 A search of the BioNet Atlas of NSW Wildlife Database was undertaken in February 2025. No individual threatened tree species that were listed within this database for the area were identified during the current field investigations of the site. The ecological significance and habitat value of the trees has not been assessed and is beyond the scope of this report.
- 3.2.6 Trees 13, 14, 20, 21, 102, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 42, 53, 56, 57, 58, 59, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 72, 73, 84, 85, 86, 87, 92, 101, 103 & 104 were within the site boundary.
- 3.2.7 Tree 101 is a street tree and is managed by the council.

4.0 ARBORICULTURAL IMPACT ASSESSMENT |

4.1 Trees 21,22, 23, 28, 32, 33,34,35, 53,57,58,60,62,64,66,67,71,86,92,101 & 104

- 4.1.1 Trees 21, 22, 23, 28, 32, 33,34,35, 53,57, 58, 60,62, 64, 66, 67,71, 86, 92,101 & 104 are not directly impacted by the proposed activities. Refer to Appendix 2 for species identifications and further details.
- 4.1.2 The supplied plans show no works are proposed within the TPZs of Trees 21, 22, 23, 28, 32, 33,34,35, 53,57,58 60, 62, 64, 66, 67,71, 86, 92,101 & 104. However, TPZ protection must be installed if the area is used for demolition & construction access.

- 4.2 Refer to AS4970 and Appendices 5, 6, 7 & 8 for further details for further details.

4.3 Trees 13 & 14

- 4.3.1 Trees 13 and 14 were identified as a *Lagerstroemia indica* (Crepe Myrtle) and were allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*.
- 4.3.2 The supplied bulk earthworks plans show that the activity is within the SRZ of Tree 13 and 14 and they will need to be removed.
- 4.3.3 Given the size and location of the encroachment, the long term structural and physiological viability of Trees 13 &14 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.
- 4.3.4 Refer to Appendix 5 for further detail
- 4.3.5 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium timeframe.

4.4 Tree 20

- 4.4.1 Tree 20 was identified as a *Koelreuteria paniculata* (Golden Rain Tree) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Retention*.

- 4.4.2 The supplied electrical plans show associated trenching is within the SRZ of Tree 20 and given the size and location of the encroachment, the long term structural and physiological viability of Tree 20 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.
- 4.4.3 Refer to Appendix 5 for further detail
- 4.4.4 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium timeframe.
- 4.5 **Trees 24, 25, 26, 29 and 30**
- 4.5.1 Trees 24, 25, 26, 29 and 30 were allocated a Moderate to High Landscape Significance Value and a Retention Value of *Priority for Retention*.
- 4.5.2 The supplied plans show that the proposed building activity and associated works is within the TPZs of Trees 24, 25, 26, 29 and 30. The TPZ encroachment is approximately 6.1%, 3%, 5.1%, 1.5% & 6.2% for Trees 24, 25, 26, 29 and 30 respectively, and represents a *Minor Encroachment* as defined by AS-4970. A *Minor Encroachment* is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ as in the current case.
- 4.5.3 Refer to Appendix 5 for further detail.
- 4.5.4 The trees can be retained if the tree protection measures detailed for Tree 27 are carefully implemented under supervision of the Project Arborist. Refer to section 4.5 for details.
- 4.6 **Tree 27**
- 4.6.1 Tree 27 was identified as a *Eucalyptus microcorys* (Tallowwood) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.
- 4.6.2 The supplied plans show the proposed building activity is within the TPZ of Tree 27. The TPZ encroachment is approximately 14.1% and represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for *Major Encroachments* if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.
- 4.6.3 Given the good physiological condition of the tree and adequate soil volume and area for root growth to offset any losses, the proposed activity can be accommodated. However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.
- 4.6.4 Prior to the start of any works (3-4 months), the following measures should be implemented to improve the growing conditions and help offset any root losses from the proposal:
- Grass/turf Removal. Grass/turf should be removed in the TPZ area to reduce nutrient competition for Trees 24, 27 & 29. The turf must be carefully removed by hand to minimise root disturbance.
 - Increase Organic Matter. A 50mm layer of composted cow manure should be installed over the TPZ area. The cow manure must be free of weeds and plant pathogens.
 - Mulch. The area must then be mulched to a depth of 50mm with Eucalyptus Mulch or equivalent.
 - Irrigation. Irrigation should be considered if the works are to occur over the summer months. Irrigation must be installed by a licensed installer and the rate monitored to insure adequate soil moisture and no water logging.
- 4.6.5 The following tree protection measures must be installed to prevent further indirect impacts.
- 4.6.6 TPZ fencing should be installed parallel to the proposed building line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ.
- 4.6.7 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.
- 4.6.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.6.9 Refer to AS4970 and Appendices 5, 6 & 7 for further details.
- 4.7 **Tree 31**
- 4.7.1 Tree 31 was identified as a *Eucalyptus microcorys* (Tallowwood) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.
- 4.7.2 The tree is within the footprint of the proposed sewer extension and will need to be removed.

- 4.7.3 Refer to Appendix 5 for further detail.
- 4.7.4 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a long timeframe.
- 4.8 **Tree 36**
- 4.8.1 Tree 36 was identified as a *Eucalyptus saligna* (Sydney Blue Gum) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Retention*.
- 4.8.2 The supplied stormwater plans show that Tree 36 is within the footprint of the proposed activity and will need to be removed.
- 4.8.3 Refer to Appendix 5 for further detail.
- 4.8.4 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium to long timeframe.
- 4.9 **Tree 42**
- 4.9.1 Tree 42 was identified as a *Syzygium paniculatum* (Brush Cherry) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*.
- 4.9.2 The supplied plans show that Tree 42 is within the footprint of the proposed building activity and will need to be removed.
- 4.9.3 Refer to Appendix 5 for further detail.
- 4.9.4 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a short timeframe.
- 4.10 **Tree 56**
- 4.10.1 Tree 56 was identified as a *Corymbia maculata* (Spotted Gum) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.
- 4.10.2 The supplied plans show that the trenching activity for hydraulic is within the SRZ of Tree 56 and will need to be removed.
- 4.10.3 Refer to Appendix 5 for further detail.
- 4.10.4 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a long timeframe.
- 4.11 **Tree 61**
- 4.11.1 Tree 61 was identified as a *Syzygium jambos* (Rose Apple Lilly Pilly) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*.
- 4.11.2 The supplied plans show that the electrical trenching activity is within the SRZ of Tree 61 and will need to be removed.
- 4.11.3 Refer to Appendix 5 for further detail.
- 4.11.4 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a short timeframe.
- 4.12 **Tree 63**
- 4.12.1 Tree 63 was identified as a *Eucalyptus saligna* (Sydney Blue Gum) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.
- 4.12.2 The supplied plans show the proposed electrical trenching activity is within the TPZ of Tree 63. The TPZ encroachment is approximately 11.4% and represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for *Major Encroachments* if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.
- 4.12.3 Given the good physiological condition of the tree the proposed development can be accommodated. **However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.**
- 4.12.4 The trenching should be conducted by hand and electrical conduit placed around structural roots where possible. The works should be supervised by the Project Arborist.
- 4.12.5 The following tree protection measures must be installed to prevent further indirect impacts.
- 4.12.6 TPZ fencing should be installed parallel to the proposed encroachment line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ.
- 4.12.7 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

- 4.12.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.12.9 Refer to AS4970 and Appendices 5, 6 & 7 for further details.
- 4.13 **Tree 59**
- 4.13.1 Tree 59 was identified as a *Eucalyptus microcorys* (Tallowwood) and was allocated a High Landscape Significance Value and a Retention Value of *Consider for Retention*.
- 4.13.2 The supplied plans show that the proposed electrical trenching activity is within the TPZ of Tree 59. The TPZ encroachment is approximately 6.3% which represents a *Minor Encroachment* as defined by AS-4970. A *Minor Encroachment* is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ as in the current case and the tree can be retained.
- 4.13.3 Tree protection should be installed to avoid further indirect impacts.
- 4.13.4 TPZ fencing should be installed parallel to the proposed encroachment line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ.
- 4.13.5 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.
- 4.13.6 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.13.7 Refer to AS4970 and Appendices 5, 6 & 7 for further details
- 4.14 **Trees 68 & 69**
- 4.14.1 Tree 68 was identified as a *Elaeocarpus eumundii* (Quandong) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Retention*. Tree 69 was identified as a *Macadamia integrifolia* (Macadamia) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*.
- 4.14.2 The supplied plans show the proposed hydraulic trenching activity is within the SRZs of Tree 68 & 69.
- 4.14.3 Given the size and location of the encroachment, the long term structural and physiological viability of Trees 68 & 69 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.
- 4.14.4 Refer to Appendix 5 for further detail.
- 4.14.5 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium timeframe.
- 4.15 **Tree 72**
- 4.15.1 Tree 72 was identified as a *Allocasuarina torulosa* (Forest Oak) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*.
- 4.15.2 The supplied plans show the proposed activity is within the TPZ of Tree 72. The TPZ encroachment is approximately 14.0% and represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for Major Encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.
- 4.15.3 Given the good physiological condition of the tree the proposed development can be accommodated. **However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.**
- 4.15.4 The trenching should be conducted by hand where possible and electrical conduit placed around structural where possible. The works should be supervised by the Project Arborist.
- 4.15.5 The following tree protection measures must be installed to prevent further indirect impacts.
- 4.15.6 TPZ fencing should be installed parallel to the proposed encroachment line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ.
- 4.15.7 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.
- 4.15.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.15.9 Refer to AS4970 and Appendices 5, 6 & 7 for further details,

4.16 Tree 73

- 4.16.1 Tree 73 was identified as *Araucaria cunninghamii* (Hoop Pine) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.
- 4.16.2 The supplied plans show the proposed hydraulic activity is within the TPZ of Tree 73. The TPZ encroachment is approximately 12.5% and represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for *Major Encroachments* if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.
- 4.16.3 Given the good physiological condition of the tree the proposed development can be accommodated. **However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.**
- 4.16.4 The trenching should be conducted by hand where possible and electrical conduit placed around structural roots where possible. The works should be supervised by the Project Arborist.
- 4.16.5 The following tree protection measures must be installed to prevent further indirect impacts.
- 4.16.6 TPZ fencing should be installed parallel to the proposed encroachment line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ.
- 4.16.7 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.
- 4.16.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.16.9 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.17 Trees 84 and 87

- 4.17.1 Trees 84 and 87 were allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Retention*.
- 4.17.2 The supplied plans show that the proposed hydraulic activity is within the TPZ of Tree 84. The TPZ encroachment is approximately 3.2% and 5% which represents a *Minor Encroachment* as defined by AS-4970. A *Minor Encroachment* is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ as in the current case and the trees can be retained.
- 4.17.3 Tree protection should be installed to avoid further indirect impacts.
- 4.17.4 TPZ fencing should be installed parallel to the proposed encroachment line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ.
- 4.17.5 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.
- 4.17.6 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.17.7 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.18 Tree 85

- 4.18.1 Tree 85 was identified as a *Fraxinus sp.* (Ash) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Retention*.
- 4.18.2 The supplied plans show the proposed hydraulic activity is within the TPZ of Tree 85. The TPZ encroachment is approximately 10.3% and represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for *Major Encroachments* if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.
- 4.18.3 Given the good physiological condition of the tree the proposed development can be accommodated. **However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.**
- 4.18.4 The trenching should be conducted by hand where possible and electrical conduit placed around structural roots where possible. The works should be supervised by the Project Arborist.
- 4.18.5 The following tree protection measures must be installed to prevent further indirect impacts.

- 4.18.6 TPZ fencing should be installed parallel to the proposed encroachment line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ.
- 4.18.7 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.
- 4.18.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.18.9 Refer to AS4970 and Appendices 5, 6 & 7 for further details.
- Trees 102 & 103**
- 4.18.10 Trees 102 & 103 were identified as *Casuarina glauca* (Swamp She Oak) and were allocated Low Landscape Significance Values and a Retention Value of *Consider for Removal*.
- 4.18.11 The supplied plans show that the proposed hydraulic trenching works are within the SRZ of Trees 102 & 103 and will need to be removed.
- 4.18.12 Refer to Appendix 5 for further detail.
- 4.18.13 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a short timeframe.
- 4.19 **Removal & Replacement Planting**
- 4.19.1 Removal works should be carried out by a practising arborist. The practising arborist should hold a minimum qualification equivalent (using Australian Qualifications Framework) of Level 3 or above in arboriculture or its recognised equivalent. The practising arborist should have a minimum of 3 years of practical experience. Pruning/removal works should be undertaken in accordance with the Australian Standard 4373: Pruning of Amenity Trees (2007), Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation and codes.
- 4.19.2 Replacement tree planting should be provided when trees are removed. Replacement trees should be supplied as advanced size stock to help offset the loss of amenity resultant from the tree removals.
- 4.19.3 Replacement planting should be supplied in accordance with Australian Standard 2303: Tree Stock for Landscape Use (2015).



Dr Matthew Laurence

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Australasian Plant Pathology Society

ResearchGate Profile - https://www.researchgate.net/profile/Matthew_Laurence

5.0 REFERENCES |

Mattheck & Breloer (2003), *The Body Language of Trees – A Handbook for Failure Analysis*.

NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), *BioNet Atlas of NSW Wildlife*.

Standards Australia (2009) Protection of Trees on Development Sites AS4970.

Standards Australia (2007) Pruning of Amenity Trees AS4373.

Standards Australia (2015) Tree Stock for Landscape Use AS2303.

6.0 APPENDIX 1 | METHODOLOGY

- 6.1 This report was based on data from a site inspection conducted between 11.8.23, 15.2.24 & 11.2.25. The recommendations in this report are based on and limited to observations from these site inspections.
- 6.2 The subject tree(s) was assessed using the Visual Tree Assessment methodology described in *The Body Language of Trees – A Handbook for Failure Analysis* (Mattheck et al., 2003). Subject trees were assessed from the ground only to provide an Arboricultural Impact Assessment and Tree Protection Specification report. No internal diagnostic testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.
- 6.3 The dimensions of the subject tree(s) are an approximation only.
- 6.4 The location of the subject tree(s) was determined from the location plan provided. Trees not shown on this plan have been plotted in their approximate location only.
- 6.5 Tree Protection Zones & Structural Root Zones for the subject tree(s) was based on methods outlined in Australian Standard 4970: *Protection of Trees on Development Sites* (2009).
- 6.6 The health of the subject tree(s) was determined by assessing:
- Foliage size and colour
 - Pest and disease infestation
 - Extension growth
 - Crown density
 - Deadwood size and volume
 - Presence of epicormic growth
- 6.7 The structural condition of the subject tree(s) was assessed by:
- Visible evidence of structural defects or instability
 - Evidence of previous pruning or physical damage
- 6.8 The Useful Life Expectancy (ULE) is used to estimate a tree's longevity in its growing environment. The ULE is based on a tree's species, health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (modified from Barrell, 2001):
- 40 years +
 - 15-40 years
 - 5-15 years
 - Less than 5 years
- 6.9 The Landscape Significance is based on a qualitative assessment of a tree's cultural, environmental and aesthetic value. This provides a relative measure of a tree's Landscape Significance and can be used to determine its Retention Value. Trees are rated under the following categories:
- Very High
 - High
 - Moderate
 - Low
 - Insignificant

LANDSCAPE SIGNIFICANCE	DESCRIPTION
VERY HIGH	<p>The subject tree is listed as a Heritage Item under the Local Environmental Plan with a local or state level of significance.</p> <p>The subject tree is listed on Council's Significant Tree Register.</p> <p>The subject tree is a remnant tree.</p>
HIGH	<p>The subject tree creates a 'sense of place' or is considered 'landmark' tree.</p> <p>The subject tree is of local, cultural or historical importance or is widely known.</p> <p>The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species or forms part of an Endangered Ecological Community associated with the subject site, as defined under the provisions of the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999.</p> <p>The subject tree is known to provide habitat to a threatened species.</p> <p>The subject tree is an excellent representative of the species in terms of aesthetic value.</p> <p>The subject tree is of significant size, scale or makes a significant contribution to the canopy cover of the locality.</p> <p>The subject tree forms part of the curtilage of a heritage item with a known or documented association with that item.</p>
MODERATE	<p>The subject tree makes a positive contribution to the visual character or amenity of the area.</p> <p>The subject tree provides a specific function such as screening or minimising the scale of a building.</p> <p>The subject tree has a known habitat value.</p> <p>The subject tree is a good representative of the species in terms of aesthetic value.</p>
LOW	<p>The subject tree is an environmental pest species or is exempt under the provisions of the local Council's Tree Management Controls.</p> <p>The subject tree makes little or no contribution to the amenity of the locality.</p> <p>The subject tree is a poor representative of the species in terms of aesthetic value.</p>
INSIGNIFICANT	<p>The subject tree is declared a Noxious Weed under the Noxious Weeds Act.</p>

The above table was provided by Anna Hopwood of TreeIQ™ and was modified from the Earthscape Criteria for Assessment of Landscape Significance.

6.10 The Retention Value is based on a tree's ULE and Landscape Significance. The subject tree(s) has been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

ULE	LANDSCAPE SIGNIFICANCE				
	VERY HIGH	HIGH	MODERATE	LOW	INSIGNIFICANT
40 years +	Priority for Retention	Priority for Retention		Consider for Removal	Priority for Removal
15-40 years		Priority for Retention	Consider for Retention		
5-15 years	Consider for Retention				
Less than 5 years	Consider for Removal	Priority for Removal			

The above table was provided by Anna Hopwood of TreeIQ™

6.11 The Tree Protection Zone (TPZ) is the area above and below ground required to preserve the vigour and long-term viability of the tree. The TPZ is based on scientific research and is generally considered by the arboricultural industry as the area required to provide adequate tree protection during construction. The TPZ is the primary means of protecting trees on development sites (Australian Standard 4970: *Protection of Trees on Development Sites*, 2009).

6.12 Works within the TPZ should be avoided. However, *Minor Encroachments*, defined in AS4970 as less than 10% of the TPZ area, are considered acceptable when it is compensated for elsewhere and contiguous within the TPZ. A *Major Encroachment*, defined in AS4970 as greater than 10% of the TPZ area or within the Structural Root Zone (SRZ), may require root investigations by non-destructive methods and tree sensitive construction methods.

6.13 The TPZ is the area within a circle that is centred on the trunk. The radius of the TPZ is calculated by the following formula:

$$TPZ = DBH \times 12$$

where

DBH= Diameter at Breast Height (1.4m)

6.14 The SRZ is the minimum area around the base of the tree required for the tree's stability. The SRZ only relates to tree stability and not the vigour and long-term viability of the tree.

6.15 The SRZ is the area within a circle that is centred on the trunk. The radius of the SRZ is calculated by the following formula:

$$SRZ = (D \times 50)^{0.42} \times 0.64$$

where

D= Trunk diameter (m) above the root buttress

6.16 Encroachment into SRZ (i.e. severance of structural roots >25mmØ) may lead to the destabilisation of the tree and the long-term viability must be demonstrated in such cases. This may require root investigations by non-destructive methods.

6.17 For further details on the TPZ and SRZ please refer to Australian Standard 4970: *Protection of Trees on Development Sites* (2009).

7.0 APPENDIX 2 | TREE ASSESSMENT SCHEDULE

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m ²)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
13	<i>Lagerstroemia indica</i> (Crepe Myrtle)	8	4	150	2	13	1.6	Dormant. No rating.	Good	Mature	5-15	Low	Consider for Removal		23.9% (Within SRZ)
14	<i>Lagerstroemia indica</i> (Crepe Myrtle)	8	4	150	2	13	1.6	Dormant. No rating.	Good	Mature	5-15	Low	Consider for Removal		Within Activity Footprint
20	<i>Koelreuteria paniculata</i> (Golden Rain Tree)	10	6	300	4	41	2.1	Dormant. No rating.	Good	Mature	5-15	Moderate	Consider for Retention	Crown conflict with adjacent structures. Structures within SRZ.	100.7% (Within SRZ)
21	<i>Eucalyptus sp.</i> (Gum tree)	24	9	1100	13	547	3.6	Fair	Fair	Late Mature	15-40	High	Priority for Retention	Crown density 25-50%. Small (<25mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in moderate volumes. Wound(s), no visible sign of decay. Adaptive growth.	No Encroachment
102	<i>Eucalyptus sp.</i> (Gum tree)	24	9	1100	13	547	3.6	Fair	Fair	Late Mature	15-40	High	Priority for Retention	Not Full VTA	Within Activity Footprint
22	<i>Eucalyptus robusta</i> (Swamp Mahogany)	17	7	700	8	222	3.0	Good	Good	Mature	15-40	High	Priority for Retention	Crown density 75-95%. Small (<25mmø) deadwood in low volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes.	No Encroachment
23	<i>Eucalyptus microcorys</i> (Tallowwood)	16	8	700	8	222	3.0	Good	Good	Mature	40+	High	Priority for Retention	Partially suppressed. Co-dominant inclusions, major.	No Encroachment

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m ²)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
24	<i>Corymbia maculata</i> (Spotted Gum)	28	12	1000	12	452	3.4	Good	Good	Mature	40+	High	Priority for Retention	Crown over building	6.1%
25	<i>Corymbia torelliana</i> (Cadaghi)	15	8	700	8	222	3.0	Fair	Good	Mature	15-40	Moderate	Consider for Retention	Crown density 50-75%. Partially suppressed.	3.0%
26	<i>Eucalyptus robusta</i> (Swamp Mahogany)	14	8	621	7	174	2.8	Good	Fair	Mature	15-40	High	Priority for Retention	Crown density 75-95%. Small (<25mmø) deadwood in low volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes. Trunk cavity(s), minor.	5.1%
27	<i>Eucalyptus microcorys</i> (Tallowwood)	24	10	1100	13	547	3.6	Good	Good	Mature	40+	High	Priority for Retention	Small (<25mmø) deadwood in low volumes. Previously crown lifted.	14.1%
28	<i>Eucalyptus nicholii</i> (Small Leaved Peppermint)	5	4	200	2	18	1.8	Fair	Good	Late Mature	5-15	Low	Consider for Removal	Crown density 50-75%. Small (<25mmø) deadwood in moderate volumes.	No Encroachment
29	<i>Eucalyptus robusta</i> (Swamp Mahogany)	16	8	1100	13	547	3.6	Fair	Poor	Late Mature	5-15	Moderate	Consider for Retention	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) epicormic growth in high volumes. Wound(s), early signs of decay. Trunk cavity(s), major. Termites.	1.5%
30	<i>Eucalyptus microcorys</i> (Tallowwood)	22	12	1000	12	452	3.4	Good	Good	Mature	40+	High	Priority for Retention	Small (<25mmø) & medium (25-75mmø) epicormic growth in low volumes.	6.2%
31	<i>Eucalyptus microcorys</i> (Tallowwood)	20	9	1000	12	452	3.4	Good	Good	Mature	40+	High	Priority for Retention	Previously crown lifted.	51.1% (Within SRZ)

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m ²)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
32	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	30	10	1100	13	547	3.6	Good	Good	Mature	40+	High	Priority for Retention	Structures within SRZ.	No Encroachment
33	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	26	10	900	11	366	3.3	Good	Fair	Mature	40+	High	Priority for Retention	Cockatoo damage at codominate fork. Small (<25mmØ) epicormic growth in moderate volumes.	No Encroachment
34	<i>Lophostemon confertus</i> (Brush Box)	8	4	566	7	145	2.7	Fair	Good	Semi-mature	5-15	Moderate	Consider for Retention	Crown density 50-75%. Small (<25mmØ) epicormic growth in moderate volumes. Partially suppressed.	No Encroachment
35	<i>Lophostemon confertus</i> (Brush Box)	16	8	400	5	72	2.3	Good	Good	Mature	15-40	High	Priority for Retention	Small (<25mmØ) deadwood Trunk cavity(s), minor. Structures within SRZ.	No Encroachment
36	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	20	7	375	5	64	2.3	Good	Good	Semi-mature	15-40	Moderate	Consider for Retention		Within Activity Footprint
42	<i>Syzygium paniculatum</i> (Brush Cherry)	5	3	112	2	13	1.5	Good	Good	Mature	5-15	Low	Consider for Removal	Small (<25mmØ) epicormic growth in moderate volumes.	Within Activity Footprint
53	<i>Callistemon salignus</i> (Willow Bottlebrush)	8	4	175	2	14	1.7	Good	Good	Mature	5-15	Moderate	Consider for Retention		No Encroachment
56	<i>Corymbia maculata</i> (Spotted Gum)	25	9	875	11	346	3.3	Good	Good	Mature	40+	High	Priority for Retention	Limited crown clearance. Structures within SRZ.	99.9% (Within SRZ)
57	<i>Eucalyptus microcorys</i> (Tallowwood)	25	9	900	11	366	3.3	Good	Good	Mature	40+	High	Priority for Retention	Previously crown lifted. Structures within SRZ.	No Encroachment

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m ²)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
58	<i>Eucalyptus microcorys</i> (Tallowwood)	16	8	500	6	113	2.6	Good	Good	Mature	40+	High	Priority for Retention		No Encroachment
59	<i>Eucalyptus microcorys</i> (Tallowwood)	25	9	900	11	366	3.3	Good	Good	Mature	40+	High	Priority for Retention		6.4%
60	<i>Syzygium jambos</i> (Rose Apple Lilly Pilly)	6	4	146	2	13	1.5	Good	Good	Semi-mature	5-15	Low	Consider for Removal		No Encroachment
61	<i>Syzygium jambos</i> (Rose Apple Lilly Pilly)	6	4	125	2	13	1.5	Good	Good	Semi-mature	5-15	Low	Consider for Removal		100% (Within SRZ)
62	<i>Syzygium jambos</i> (Rose Apple Lilly Pilly)	6	4	125	2	13	1.5	Good	Good	Semi-mature	5-15	Low	Consider for Removal		No Encroachment
63	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	25	10	1000	12	452	3.4	Good	Good	Mature	40+	High	Priority for Retention		11.4%
64	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	19	10	700	8	222	3.0	Good	Good	Mature	40+	High	Priority for Retention		No Encroachment
66	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	7	4	300	4	41	2.1	Good	Good	Mature	5-15	Moderate	Consider for Retention		No Encroachment
67	<i>Elaeocarpus eumundii</i> (Quandong)	7	3	75	2	13	1.5	Good	Good	Semi-mature	5-15	Moderate	Consider for Retention		No Encroachment

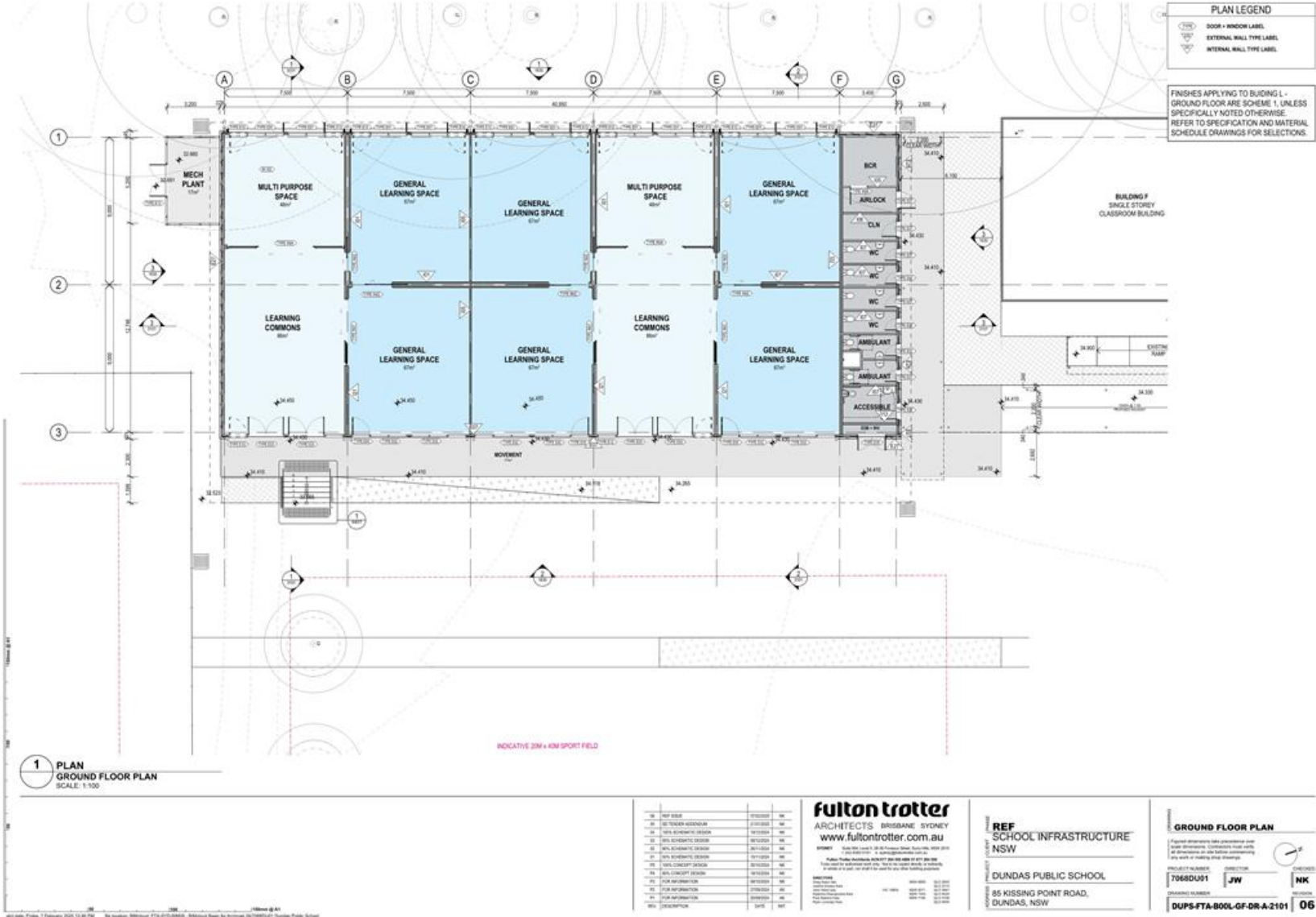
Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m ²)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
68	<i>Elaeocarpus eumundii</i> (Quandong)	7	3	75	2	13	1.5	Good	Good	Semi-mature	5-15	Moderate	Consider for Retention		12.7%
69	<i>Macadamia integrifolia</i> (Macadamia)	4	3	125	2	13	1.5	Good	Fair	Mature	5-15	Low	Consider for Removal	Trunk cavity(s), major.	Within Activity Footprint
71	<i>Casuarina glauca</i> (Swamp She Oak)	16	5	375	5	64	2.3	Good	Good	Mature	15-40	Moderate	Consider for Retention	Group of 12	No Encroachment
72	<i>Allocasuarina torulosa</i> (Forest Oak)	7	4	292	3	38	2.1	Good	Poor	Mature	5-15	Low	Consider for Removal	Trunk cavity(s), major.	14.0%
73	<i>Araucaria cunninghamii</i> (Hoop Pine)	24	10	900	11	366	3.3	Good	Good	Mature	40+	High	Priority for Retention		12.5%
84	<i>Fraxinus sp.</i> (Ash)	15	4	350	4	55	2.2	Dormant. No rating.	Good	Mature	5-15	Moderate	Consider for Retention		3.2%
85	<i>Fraxinus sp.</i> (Ash)	15	4	350	4	55	2.2	Dormant. No rating.	Good	Mature	5-15	Moderate	Consider for Retention		10.3%
86	<i>Fraxinus sp.</i> (Ash)	12	4	225	3	23	1.8	Dormant. No rating.	Good	Mature	5-15	Moderate	Consider for Retention		No Encroachment
87	<i>Pittosporum undulatum</i> (Native Daphne)	9	5	320	4	46	2.1	Good	Good	Mature	5-15	Moderate	Consider for Retention		5.0%

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m ²)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
92	<i>Stenocarpus sinuatus</i> (Firewheel Tree)	12	5	250	3	28	1.9	Good	No access to base. No rating.	Mature	5-15	Moderate	<i>Consider for Retention</i>		No Encroachment
101	<i>Melaleuca quinquenervia</i> (Broad Leaved Paperbark)	11	4	325	4	48	2.1							Street Tree	No Encroachment
102	<i>Casuarina glauca</i> (Swamp She Oak)	7	3	150	2	13	1.6	Good	No access to base. No rating.	Semi-mature	5-15	Low	<i>Consider for Removal</i>	Not a full VTA.	Within Activity Footprint
103	<i>Casuarina glauca</i> (Swamp She Oak)	7	3	225	3	23	1.8	Good	No access to base. No rating.	Semi-mature	5-15	Low	<i>Consider for Removal</i>	Not a full VTA.	26.2% (Within SRZ)
104	<i>Melaleuca quinquenervia</i> (Broad Leaved Paperbark)	7	3	275	3.3	34.2	2.0	Good	No access to base. No rating.	Semi-mature	5-15	Moderate	<i>Consider for Retention</i>	Not a full VTA.	No Encroachment

8.0 APPENDIX 3 | TREE LOCATION PLAN



9.0 APPENDIX 4 | PROPOSED ACTIVITY PLANS



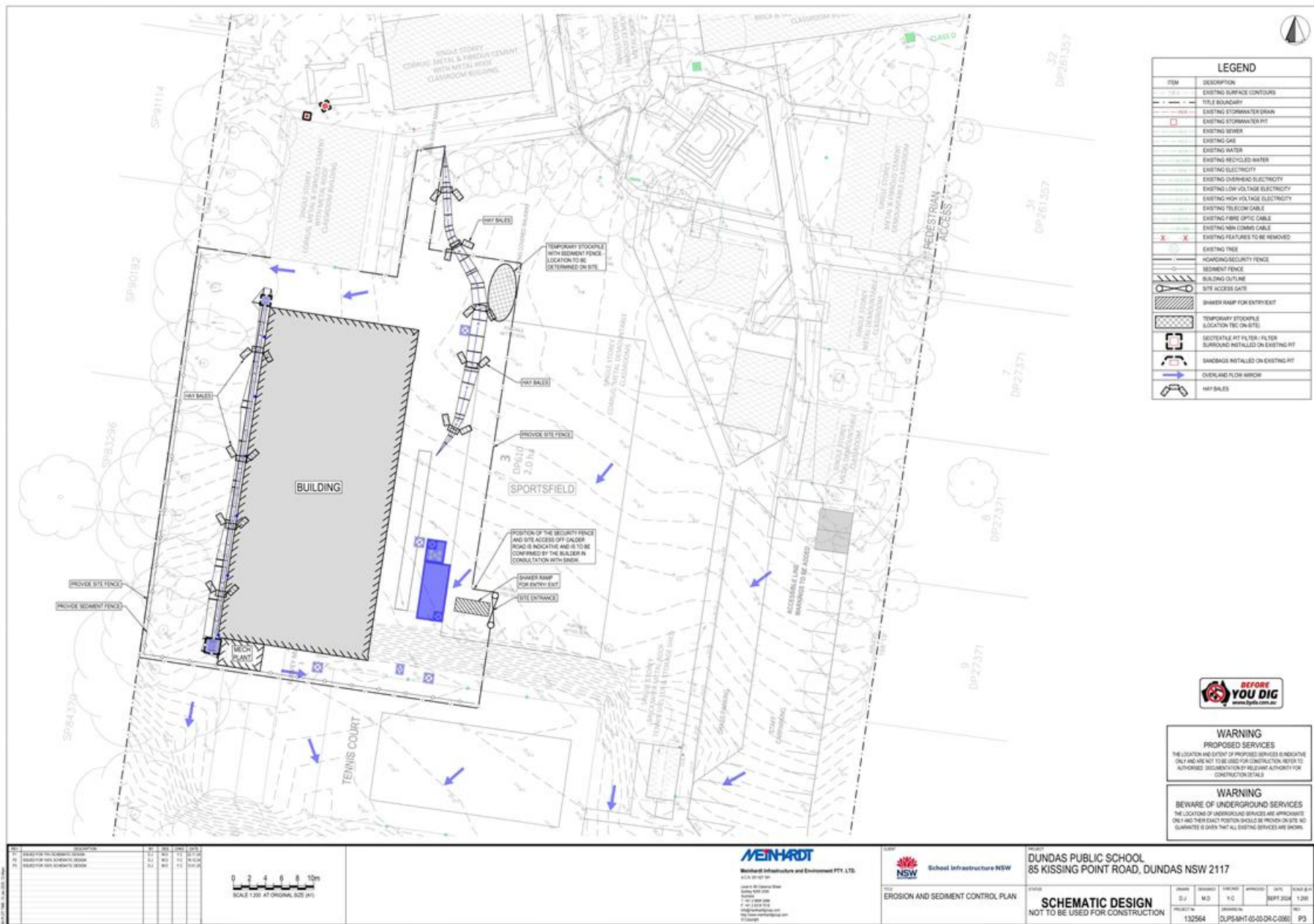


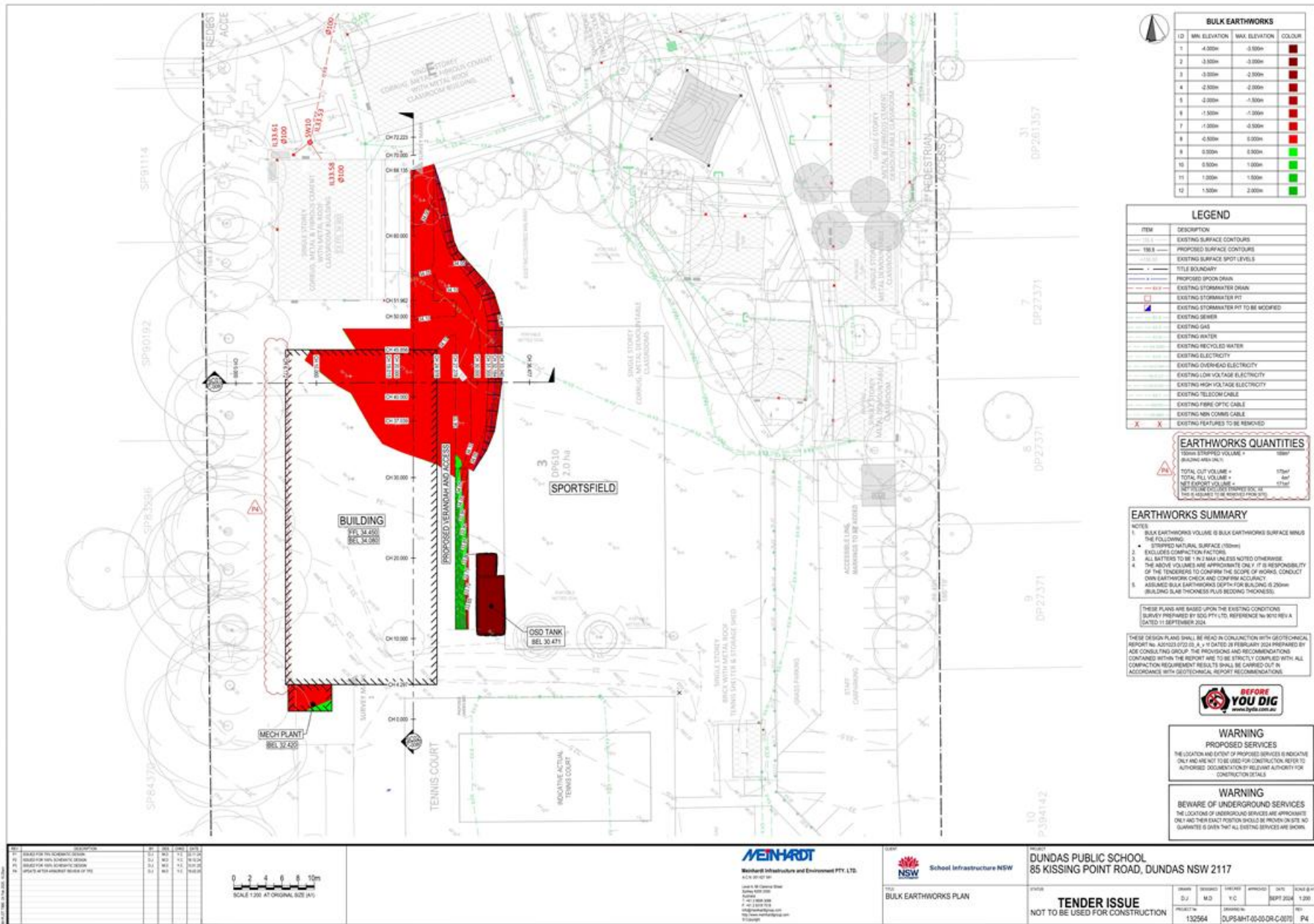
Tree Removal Plan

Figured dimensions take precedence over exact dimensions. Contractors must verify all dimensions on site before commencing any work or making these drawings.

PROJECT NUMBER: **7068DU01** DIRECTOR: **JW** CHECKED: **NK**

DRAWING NUMBER: **PLANS-ETA-00-00-DR-A-1604** REVISION: **03**





BUILDING COMMUNICATIONS ROOM (BCR)
(PROPOSED NEW)
SEE BLOCK L POWER AND COMMUNICATIONS
ARRANGEMENT FOR DETAILS.

SOLAR PV ARRAY
(PROPOSED NEW)
NEW 21kW SOLAR SYSTEM TO BE INSTALLED ON BLOCK L,
INCLUDING PV SOLAR MODULES AND INVERTER.
1x SOLAR INVERTER TO BE LOCATED IN BLOCK L IN THE
ELECTRICAL CUPBOARD. INVERTER WILL CONNECT TO THE
NEW EDB ON THE GROUND FLOOR.

ELECTRICAL DISTRIBUTION BOARD (EDB)
(PROPOSED NEW)
NEW DISTRIBUTION BOARD TO SUPPLY NEW BLOCK L TO BE
CONNECTED TO THE EXISTING MSB VIA NEW UNDERGROUND
SUBMANS AS SHOWN.
SEE BLOCK L GROUND FLOOR POWER AND COMMUNICATIONS
ARRANGEMENT FOR DETAILS.

AUTHORITY SUBSTATION
(EXISTING TO BE UPGRADED)
EXISTING SUBSTATION 8.33198 ON KISSING POINT ROAD IS TO BE
UPGRADED FROM A 315kVA TRANSFORMER TO 500kVA IN SITU.
NEW LV SUPPLY CONNECTION FOR THE SCHOOL MSB TO BE
ESTABLISHED ON THE UPGRADED SUBSTATION.
THIS WILL REQUIRE A SCHEDULED SHUTDOWN FOR CUSTOMERS
CURRENTLY SUPPLIED BY THIS EXISTING SUBSTATION.



No. DESCRIPTION

- 1 ALLOW FOR REPLACEMENT OF EXISTING SWITCHES IN
BUILDING DISTRIBUTORS AS PER THE LATEST DUNDAS
ICT AUDIT.
- 2 EXISTING AUTHORITY METER WITHIN TO BE RETAINED.
- 3 INDICATIVE RETICULATION PATH OF NEW
COMMUNICATIONS AND SECURITY CABLES TO BLOCK L.
BCR CABLES SHALL BE RUN WITHIN IN-GROUND
CONDUITS WITH PITS EVERY 30m AND CHANGE OF
DIRECTION.
COMMUNICATIONS CONDUITS TO BE MINIMUM 2x 100mm
DIAMETER CABLE PIT ADJACENT TO PROPOSED NEW
BLOCK TO BE PS TYPE. OTHER NEW COMMUNICATIONS
PITS ALONG CONDUIT RETICULATION PATH TO BE PS
TYPE. ALL NEW COMMUNICATION CABLE PITS INSTALLED
ARE TO HAVE CONCRETE LIDS.
NEW SECURITY CONDUIT SHALL CONSIST OF MINIMUM 2x
50mm CONDUIT. SECURITY PITS SHALL BE SIZED BASED
ON SITE CONDITIONS, MANUFACTURER REQUIREMENTS
AND RELEVANT STANDARDS.
- 4 NEW PRIVATE ELECTRICAL PILLAR TO BE INSTALLED
WITHIN THE PROPERTY BOUNDARY FOR THE
CONNECTION OF CONSUMER AND SERVICE MAINS.
POINT OF COMMON CONNECTION TO BE ESTABLISHED
WITHIN A NEW AUTHORITY PILLAR OUTSIDE THE
PROPERTY BOUNDARY.

AUTHORITY POLE-MOUNTED SUBSTATION (DISKVA)
(EXISTING CONNECTION TO BE TERMINATED)
PRELIMINARY MAXIMUM DEMAND CALCULATIONS
INDICATE THE EXISTING 315kVA SUBSTATION
CONNECTION ON KISSING POINT ROAD DOES NOT HAVE
SUFFICIENT CAPACITY FOR THE PROPOSED WORKS.

CONNECTION TO THIS POLE-MOUNTED SUBSTATION IS
TO BE TERMINATED. THE EXISTING OVERHEAD CABLES
AND PRIVATE POWER POLE SPANNING KISSING POINT
ROAD IS TO BE DISCONNECTED AND REMOVED.

CONSUMER MAINS
(PROPOSED NEW)
CONSUMER MAINS TO THE EXISTING MSB IS TO BE
UPGRADED TO ACCOMMODATE THE LARGER SUPPLY SIZE
AND SPARE CAPACITY, WITH A NEW INDICATIVE
ROUTE AS SHOWN.
NEW CONSUMER MAINS TO BE A MINIMUM SIZE OF
8x120mm² CU XLPE IN MINIMUM 2x100mm HD PVC
CONDUIT.
EXISTING CONSUMER MAINS CABLES TO BE
DISCONNECTED AND REMOVED. EXISTING CONDUITS
SHALL BE ABANDONED IN SITU.
NEW CONSUMER MAINS SHALL TERMINATE AT A NEW
AUTHORITY CONNECTION POINT (PILLAR).

MAIN SWITCHBOARD (MSB)
(EXISTING TO REMAIN)
INDICATIVE LOCATION OF EXISTING MAIN SWITCHBOARD,
NEW BLOCK L TO BE SUPPLIED BY THIS EXISTING MSB.
IT IS PROPOSED THAT THIS MSB AND ITS ENCLOSURE BE
RETAINED, WITH MODIFICATIONS TO ACCOMMODATE THE
INCREASED SUPPLY SIZE.

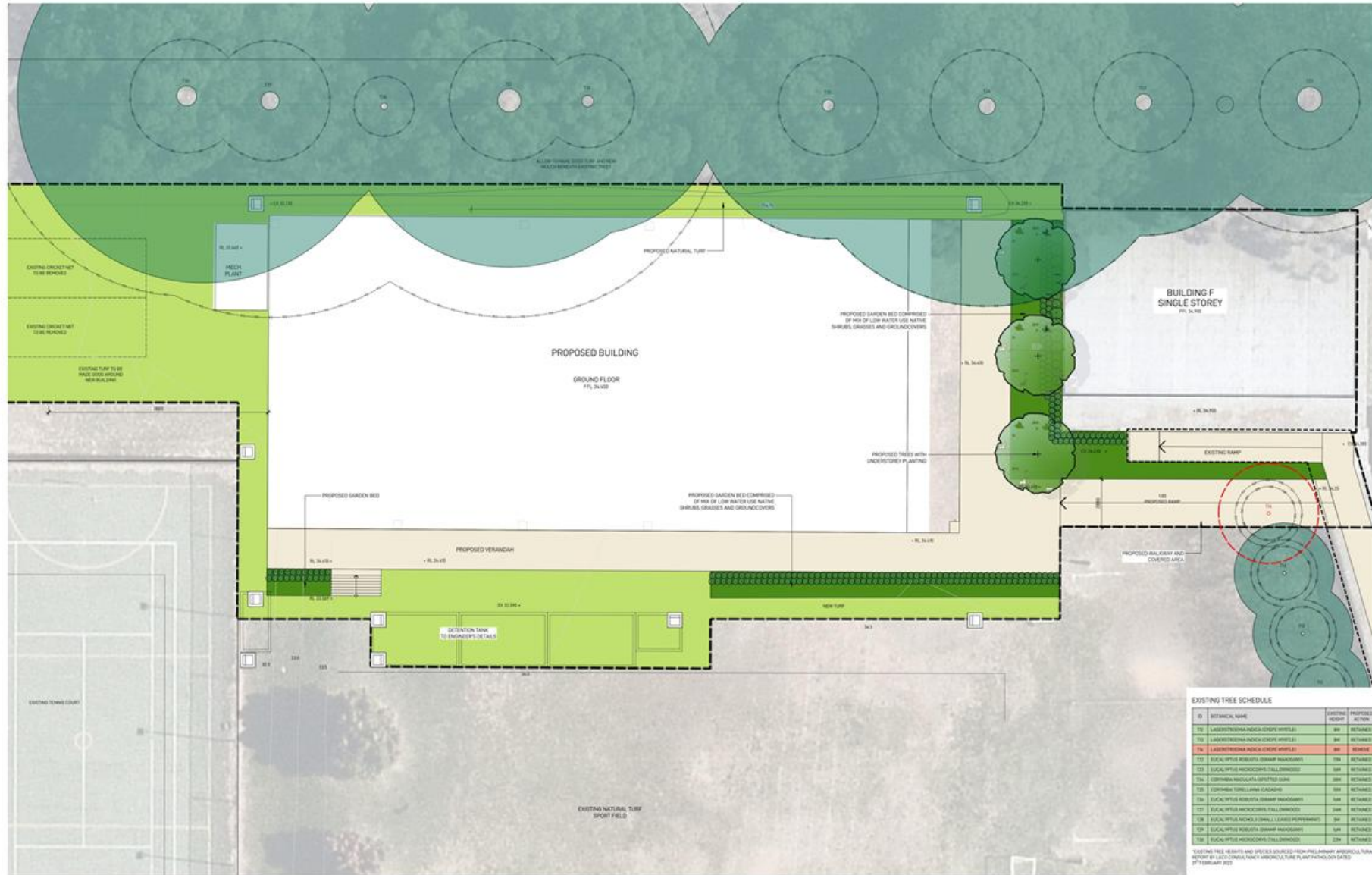
EXISTING MSB HAS BEEN IDENTIFIED AS HAVING A FAULT
RATING OF 30kA



MAIN COMMUNICATIONS ROOM
(EXISTING TO REMAIN)
INDICATIVE LOCATION OF EXISTING MAIN
COMMUNICATIONS ROOM.
NEW FIBRE LINK TO PROPOSED NEW
BUILDING TO BE TERMINATED HERE ON
EXISTING COMMUNICATIONS RACK.
OUTGOING FIBRE LINK SHALL
RETICULATE INTERNALLY USING
EXISTING CABLE TRAYS AND EXIT
BUILDING APPROXIMATELY AS SHOWN.

MCR (AR0008) IS TO BE UPGRADED
DURING THESE WORKS. REFER TO
LATEST DUNDAS ICT SURVEY FOR AN
ITEMISED SUMMARY OF THE PROPOSED
UPGRADES.





ID	BOTANICAL NAME	EXISTING HEIGHT	PROPOSED ACTION
T01	LAURUSTROBILANICA (GREY MYRTLE)	8M	RETAINED
T02	LAURUSTROBILANICA (GREY MYRTLE)	8M	RETAINED
T03	LAURUSTROBILANICA (GREY MYRTLE)	8M	RETAINED
T04	LAURUSTROBILANICA (GREY MYRTLE)	8M	RETAINED
T05	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
T06	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
T07	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
T08	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
T09	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
T10	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
T11	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
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T99	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED
T100	EUCALYPTUS MICROCORPS (TALL WATTLE)	10M	RETAINED

LANDSCAPE ARCHITECT

GROUND INK

LANDSCAPE ARCHITECTS

SUITE 19, 14 HERBERT ST, DUNDAS NSW 2031 PH: 02 941 0214

WWW.GROUNDINK.COM.AU

LEGEND

FINISHED FLOOR LEVEL

EXISTING SPOT LEVEL

PROPOSED SPOT LEVEL

TOP OF WALL LEVEL

EXTENT OF WORKS BOUNDARY

STRUCTURAL PILOT ZONE LINE

TREE PROTECTION ZONE LINE

LINE OF BUILDING OVERHEAD

LINE OF REMOVED DEMONSTRABLES

UNDERGROUND PIT

PROPOSED GARDEN BED

RENOVATED TURF

EXISTING TREES TO BE REMOVED

EXISTING TREES TO BE RETAINED

PROPOSED TREES

NOTE

VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK. REPORT ALL DISCREPANCIES TO LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION. DIMENSIONS TO BE TAKEN IN PREFERENCE TO LOCAL DIMENSIONS. ALL WORK IS TO CONFORM TO RELEVANT AUSTRALIAN STANDARDS AND OTHER CODES AS APPLICABLE. LOCATION OF UNDERGROUND SERVICES TO BE PROVIDED ON SITE AND INSPECTED IF NECESSARY PRIOR TO CONSTRUCTION. ALL REMOVED TREES AND PLANT SPECIES AND QUANTITIES SHOWN ARE INDICATIVE ONLY AND ARE SUBJECT TO CHANGE BASED ON FURTHER PROJECT REQUIREMENTS.

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHECKED	DRAWING TITLE
1	15.11.20	ISSUE FOR WORK COMMENCEMENT DESIGN	201	201	LANDSCAPE PLAN
2	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
3	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
4	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
5	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
6	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
7	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
8	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
9	15.11.20	ISSUE FOR CONSTRUCTION	201	201	
10	15.11.20	ISSUE FOR CONSTRUCTION	201	201	

PROJECT

DUNDAS PUBLIC SCHOOL

DUNDAS, NSW 2031

14 HERBERT STREET, DUNDAS NSW 2031

SCALE 1:1000

DATE 15.11.20

BY 201

CHECKED 201

DRAWING TITLE LANDSCAPE PLAN

PROJECT NUMBER DUPS-GIL-00-00-DR-L-3001

DATE 15.11.20

BY 201

CHECKED 201

DRAWING TITLE LANDSCAPE PLAN

PROJECT NUMBER DUPS-GIL-00-00-DR-L-3001

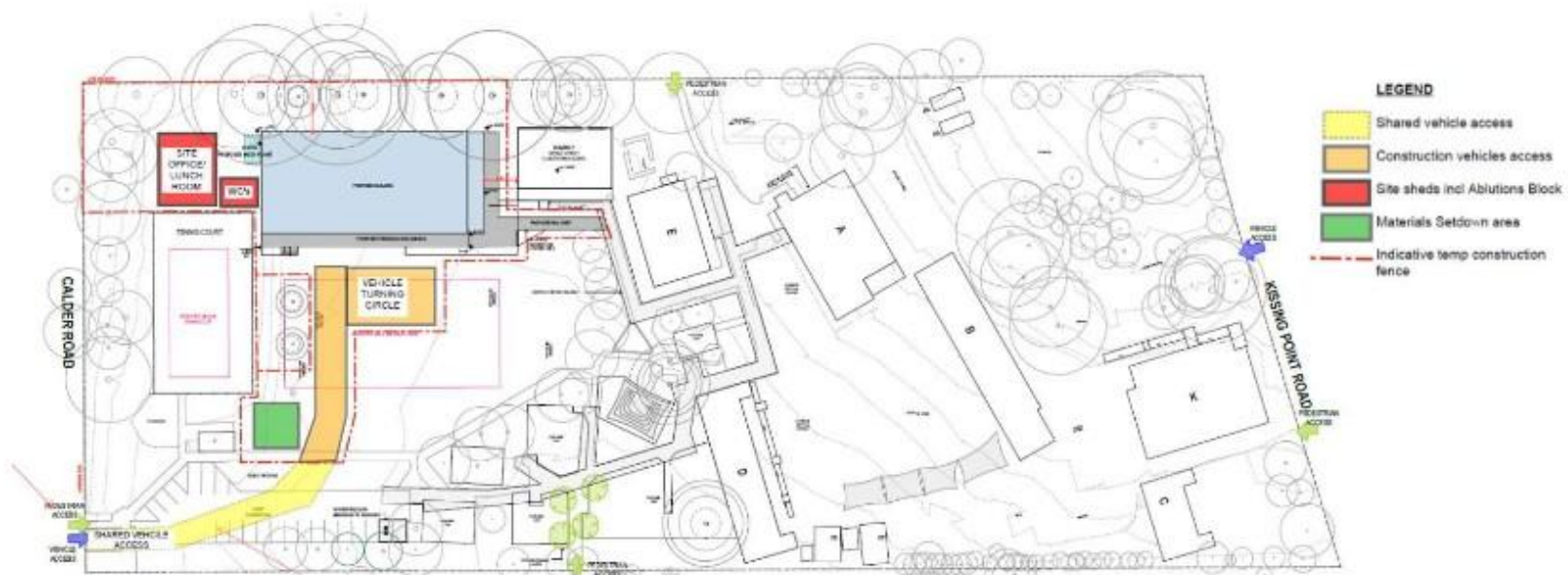
DATE 15.11.20

BY 201

CHECKED 201

DRAWING TITLE LANDSCAPE PLAN

PROJECT NUMBER DUPS-GIL-00-00-DR-L-3001



10.0 APPENDIX 5 | ARBORICULTURAL IMPACT ASSESSMENT PLANS

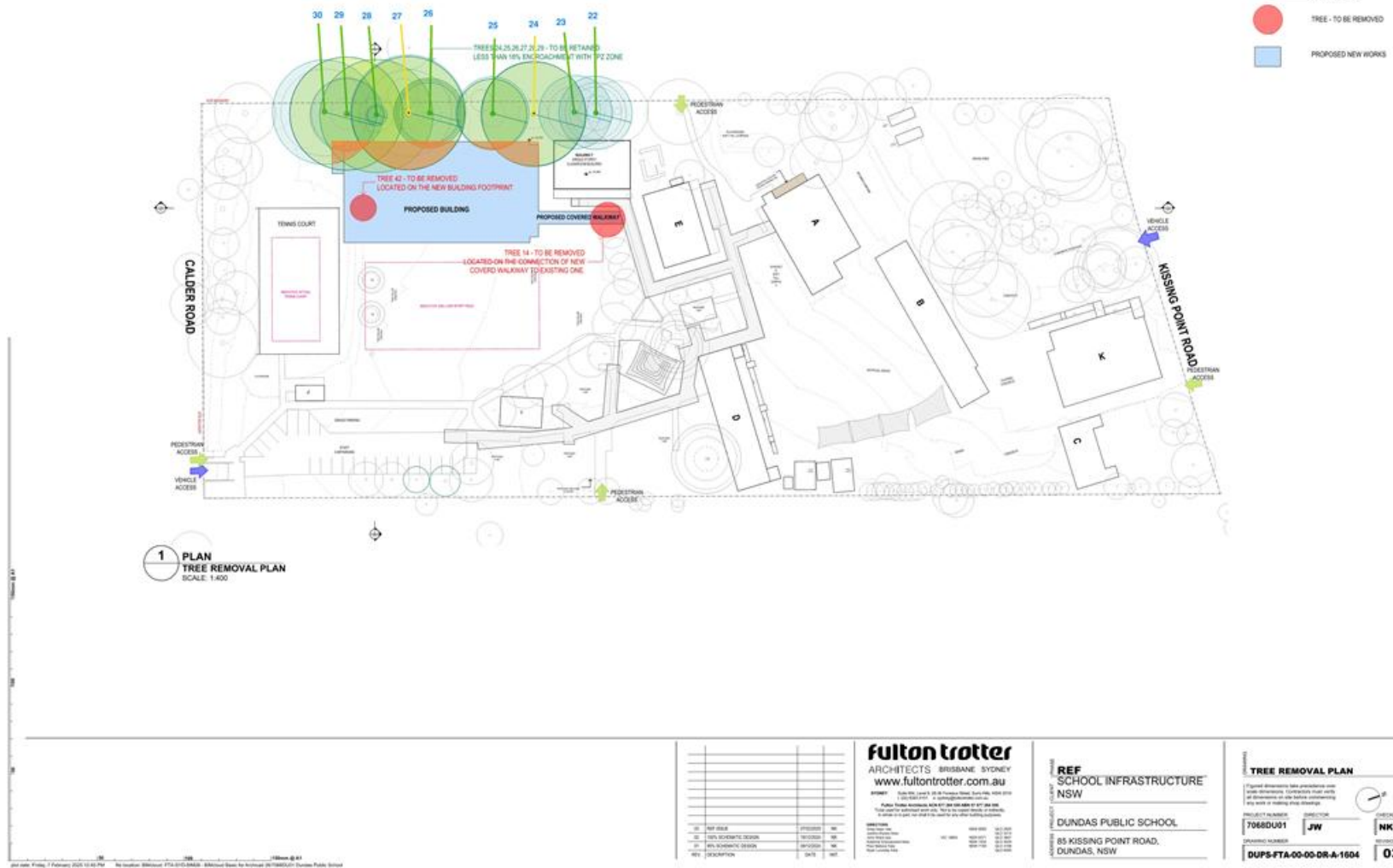
Impact Assessment Plan

L&Co Legend

- Major Encroachment Tree removal may be required
- TPZ encroachment
- TPZ
- Tree retained

TREE REMOVAL LEGEND

- TREE NUMBER
- SRZ
- TPZ
- CROWN SPREAD
- TREE - TO BE REMOVED
- PROPOSED NEW WORKS



L&Co Legend

- Major Encroachment Tree removal may be required
- SPZ
- TPZ encroachment
- TPZ
- * Tree number
- Tree removal required
- Tree retained

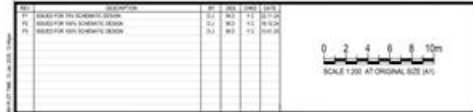
LEGEND

ITEM	DESCRIPTION
	EXISTING SURFACE CONTOURS
	TITLE BOUNDARY
	EXISTING STORMWATER DRAIN
	EXISTING STORMWATER PIT
	EXISTING SEWER
	EXISTING GAS
	EXISTING WATER
	EXISTING RECYCLED WATER
	EXISTING ELECTRICITY
	EXISTING OVERHEAD ELECTRICITY
	EXISTING LOW VOLTAGE ELECTRICITY
	EXISTING HIGH VOLTAGE ELECTRICITY
	EXISTING TELECOM CABLE
	EXISTING FIBRE OPTIC CABLE
	EXISTING NBN COAXIAL CABLE
	EXISTING FEATURES TO BE REMOVED
	EXISTING TREE
	HORIZONTAL SECURITY FENCE
	SECURITY FENCE
	BUILDING OUTLINE
	SITE ACCESS GATE
	BIKKER RAMP FOR ENTRY/EXIT
	TEMPORARY STOOP/CL
	LOCATION OF ON-ROUTE
	GEOTEXTILE PTF FILLER - FILTER
	SUBGRADE INSTALLED ON EXISTING PTF
	SANDFILL FILLING ON EXISTING PTF
	OVERLAND FLOW NORMAL
	HOT BAILS



WARNING
PROPOSED SERVICES
 THE LOCATION AND EXTENT OF PROPOSED SERVICES IS INDICATED ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. REFER TO AUTHORIZED DOCUMENTATION BY RELEVANT AUTHORITY FOR CONSTRUCTION DETAILS.

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE
ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO
GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.



Meinhardt Infrastructure and Environment PTY. LTD.
611 9 30 40 00



School Infrastructure NSW

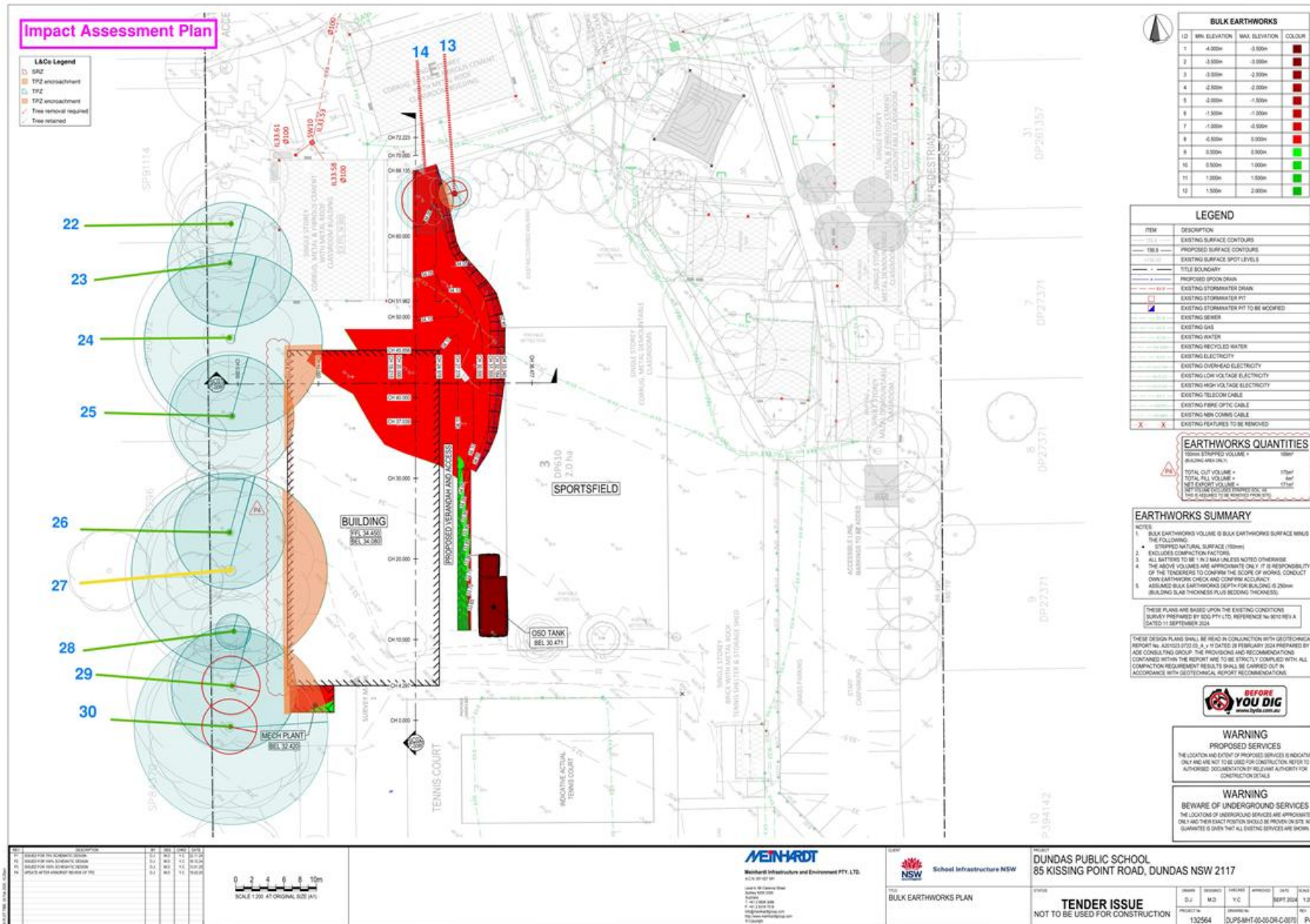
DUNDAS PUBLIC SCHOOL
85 KISSING POINT ROAD, DUNDAS NSW 2117

SCHEMATIC DESIGN
NOT TO BE USED FOR CONSTRUCTION

DESIGN	DESIGNED	CHECKED	APPROVED	DATE	SCALE
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PROJECT NO.		DRAWING NO.		REV.	
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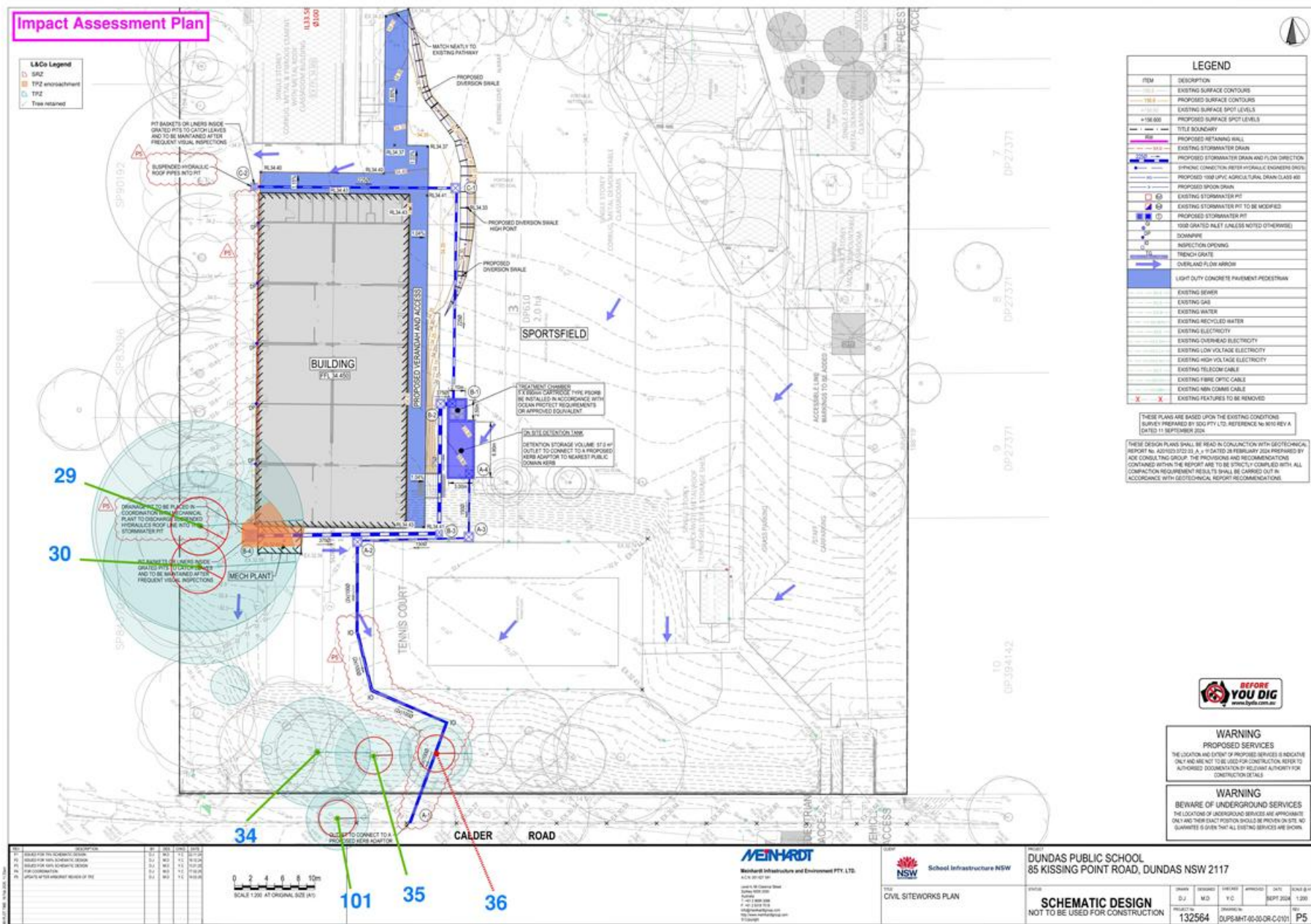
L&Co Legend

- SAZ
- TPZ encroachment
- TPZ
- TPZ encroachment
- Tree removal required
- Tree retained

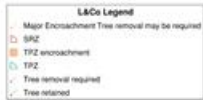


L&Co Legend

- SRZ
- TPZ embolochment
- TPZ
- Tree retained



Impact Assessment Plan



SOLAR PV ARRAY
(PROPOSED NEW)
NEW 21kW SOLAR SYSTEM TO BE INSTALLED ON BLOCK L, INCLUDING PV SOLAR MODULES AND INVERTER. 1x SOLAR INVERTER TO BE LOCATED IN BLOCK L IN THE ELECTRICAL CUPBOARD. INVERTER WILL CONNECT TO THE NEW EDB ON THE GROUND FLOOR.

ELECTRICAL DISTRIBUTION BOARD (EDB)
(PROPOSED NEW)
NEW DISTRIBUTION BOARD TO SUPPLY NEW BLOCK L. TO BE CONNECTED TO THE EXISTING MSB VIA NEW UNDERGROUND SUBMANS AS SHOWN.
SEE BLOCK L GROUND FLOOR POWER AND COMMUNICATIONS ARRANGEMENT FOR DETAILS.

BUILDING COMMUNICATIONS ROOM (BCR)
(PROPOSED NEW)
SEE BLOCK L POWER AND COMMUNICATIONS ARRANGEMENT FOR DETAILS.

AUTHORITY SUBSTATION
(EXISTING TO BE UPGRADED)
EXISTING SUBSTATION 8.33198 ON KISSING POINT ROAD IS TO BE UPGRADED FROM A 315kVA TRANSFORMER TO 500kVA IN SITU.
NEW LV SUPPLY CONNECTION FOR THE SCHOOL MSB TO BE ESTABLISHED ON THE UPGRADED SUBSTATION.
THIS WILL REQUIRE A SCHEDULED SHUTDOWN FOR CUSTOMERS CURRENTLY SUPPLIED BY THIS EXISTING SUBSTATION.



No. DESCRIPTION

- 1 ALLOW FOR REPLACEMENT OF EXISTING SWITCHES IN BUILDING DISTRIBUTORS AS PER THE LATEST DUNDAS ICT ADT.
- 2 EXISTING AUTHORITY METER WITHIN TO BE RETAINED.
- 3 INDICATIVE RETICULATION PATH OF NEW COMMUNICATIONS AND SECURITY CABLES TO BLOCK L. BCR CABLES SHALL BE RUN WITHIN IN-GROUND CONDUITS WITH PITS EVERY 30m AND CHANGE OF DIRECTION. COMMUNICATIONS CONDUITS TO BE MINIMUM 2x 100mm DIAMETER CABLE PIT ADJACENT TO PROPOSED NEW BLOCK TO BE PS TYPE. OTHER NEW COMMUNICATIONS PITS ALONG CONDUIT RETICULATION PATH TO BE PS TYPE. ALL NEW COMMUNICATION CABLE PITS INSTALLED ARE TO HAVE CONCRETE LIDS. NEW SECURITY CONDUIT SHALL CONSIST OF MINIMUM 2x 50mm CONDUIT. SECURITY PITS SHALL BE SIZED BASED ON SITE CONDITIONS, MANUFACTURER REQUIREMENTS AND RELEVANT STANDARDS.
- 4 NEW PRIVATE ELECTRICAL PILLAR TO BE INSTALLED WITHIN THE PROPERTY BOUNDARY FOR THE CONNECTION OF CONSUMER AND SERVICE MAINS. POINT OF COMMON CONNECTION TO BE ESTABLISHED WITHIN A NEW AUTHORITY PILLAR OUTSIDE THE PROPERTY BOUNDARY.

AUTHORITY POLE-MOUNTED SUBSTATION (DISKVA)
(EXISTING CONNECTION TO BE TERMINATED)
PRELIMINARY MAXIMUM DEMAND CALCULATIONS INDICATE THE EXISTING 315kVA SUBSTATION CONNECTION ON KISSING POINT ROAD DOES NOT HAVE SUFFICIENT CAPACITY FOR THE PROPOSED WORKS.
CONNECTION TO THIS POLE-MOUNTED SUBSTATION IS TO BE TERMINATED. THE EXISTING OVERHEAD CABLES AND PRIVATE POWER POLE SPANNING KISSING POINT ROAD IS TO BE DISCONNECTED AND REMOVED.

CONSUMER MAINS
(PROPOSED NEW)
CONSUMER MAINS TO THE EXISTING MSB IS TO BE UPGRADED TO ACCOMMODATE THE LARGER SUPPLY SIZE AND SPARE CAPACITY, WITH A NEW INDICATIVE ROUTE AS SHOWN.
NEW CONSUMER MAINS TO BE A MINIMUM SIZE OF 8x12 120mm² CU XLPE IN MINIMUM 2x100mm HD PVC CONDUIT.
EXISTING CONSUMER MAINS CABLES TO BE DISCONNECTED AND REMOVED. EXISTING CONDUITS SHALL BE ABANDONED IN SITU.
NEW CONSUMER MAINS SHALL TERMINATE AT A NEW AUTHORITY CONNECTION POINT (PILLAR).

MAIN SWITCHBOARD (MSB)
(EXISTING TO REMAIN)
INDICATIVE LOCATION OF EXISTING MAIN SWITCHBOARD, NEW BLOCK L TO BE SUPPLIED BY THIS EXISTING MSB.
IT IS PROPOSED THAT THIS MSB AND ITS ENCLOSURE BE RETAINED, WITH MODIFICATIONS TO ACCOMMODATE THE INCREASED SUPPLY SIZE.
EXISTING MSB HAS BEEN IDENTIFIED AS HAVING A FAULT RATING OF 30kA.



MAIN COMMUNICATIONS ROOM
(EXISTING TO REMAIN)
INDICATIVE LOCATION OF EXISTING MAIN COMMUNICATIONS ROOM.
NEW FIBRE LINK TO PROPOSED NEW BUILDING TO BE TERMINATED HERE ON EXISTING COMMUNICATIONS RACK. OUTGOING FIBRE LINK SHALL RETICULATE INTERNALLY USING EXISTING CABLE TRAYS AND EXIT BUILDING APPROXIMATELY AS SHOWN.
MCR (AR0008) IS TO BE UPGRADED DURING THESE WORKS. REFER TO LATEST DUNDAS ICT SURVEY FOR AN ITEMISED SUMMARY OF THE PROPOSED UPGRADES.

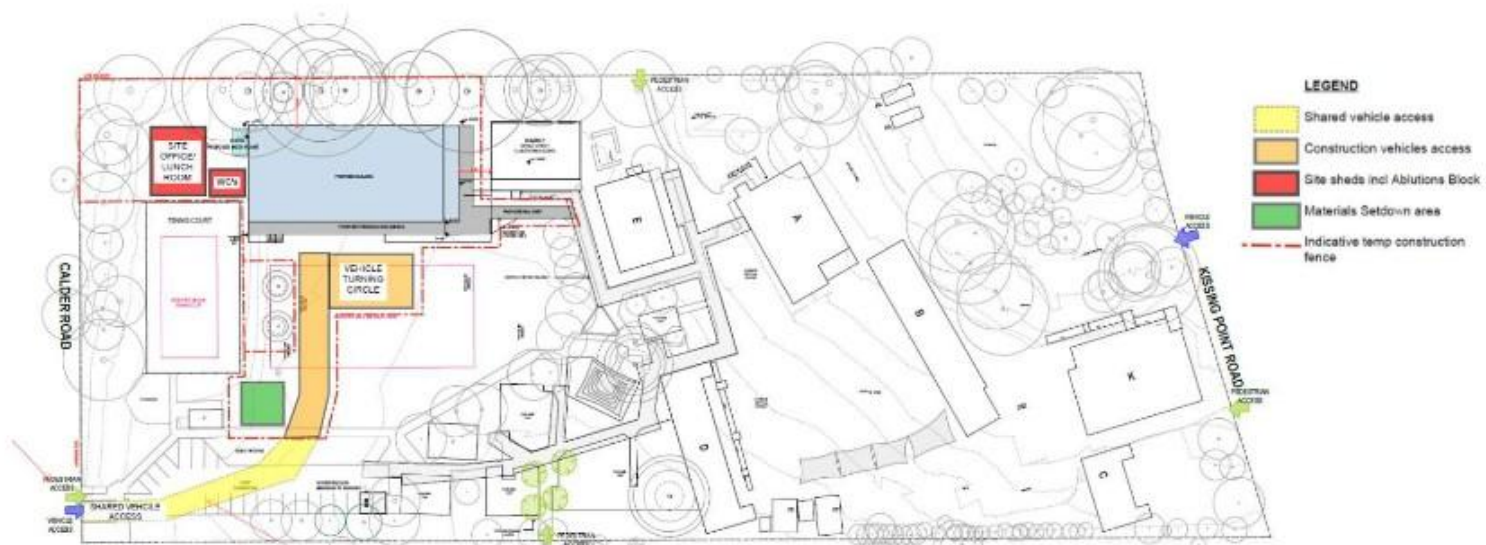


L&Co Legend

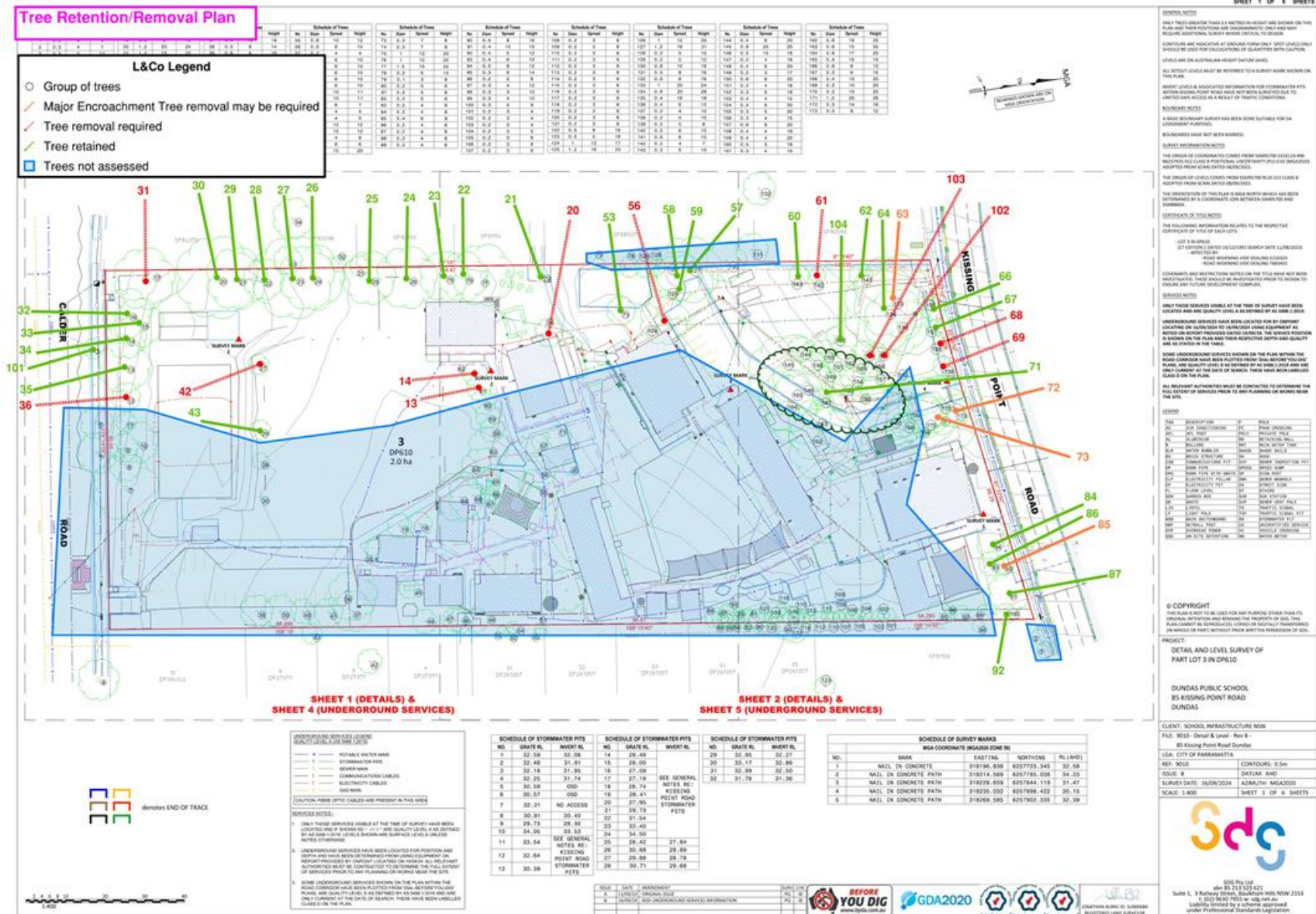
- Group of trees
- SPZ
- TPZ encroachment
- TPZ
- Tree removal required
- Tree removal required
- Tree retained



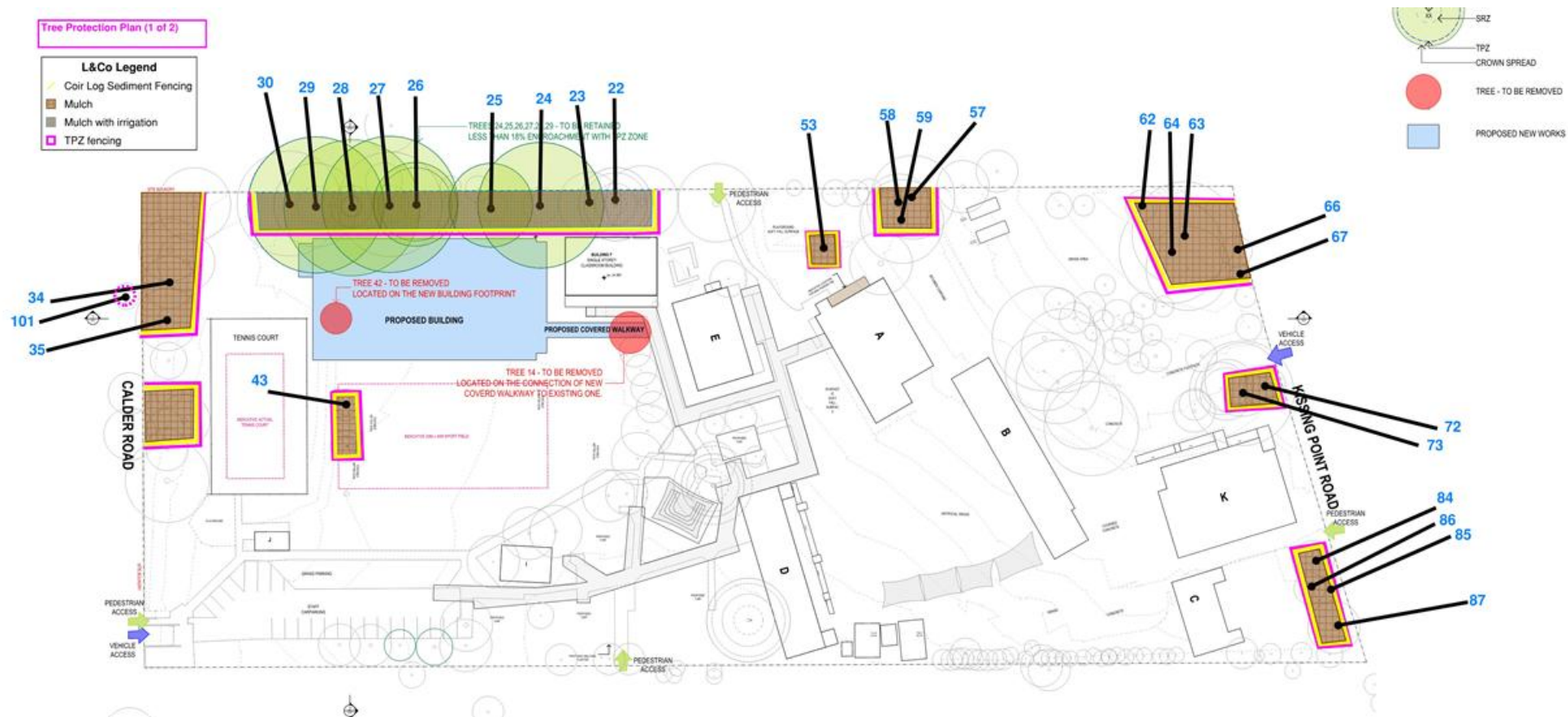
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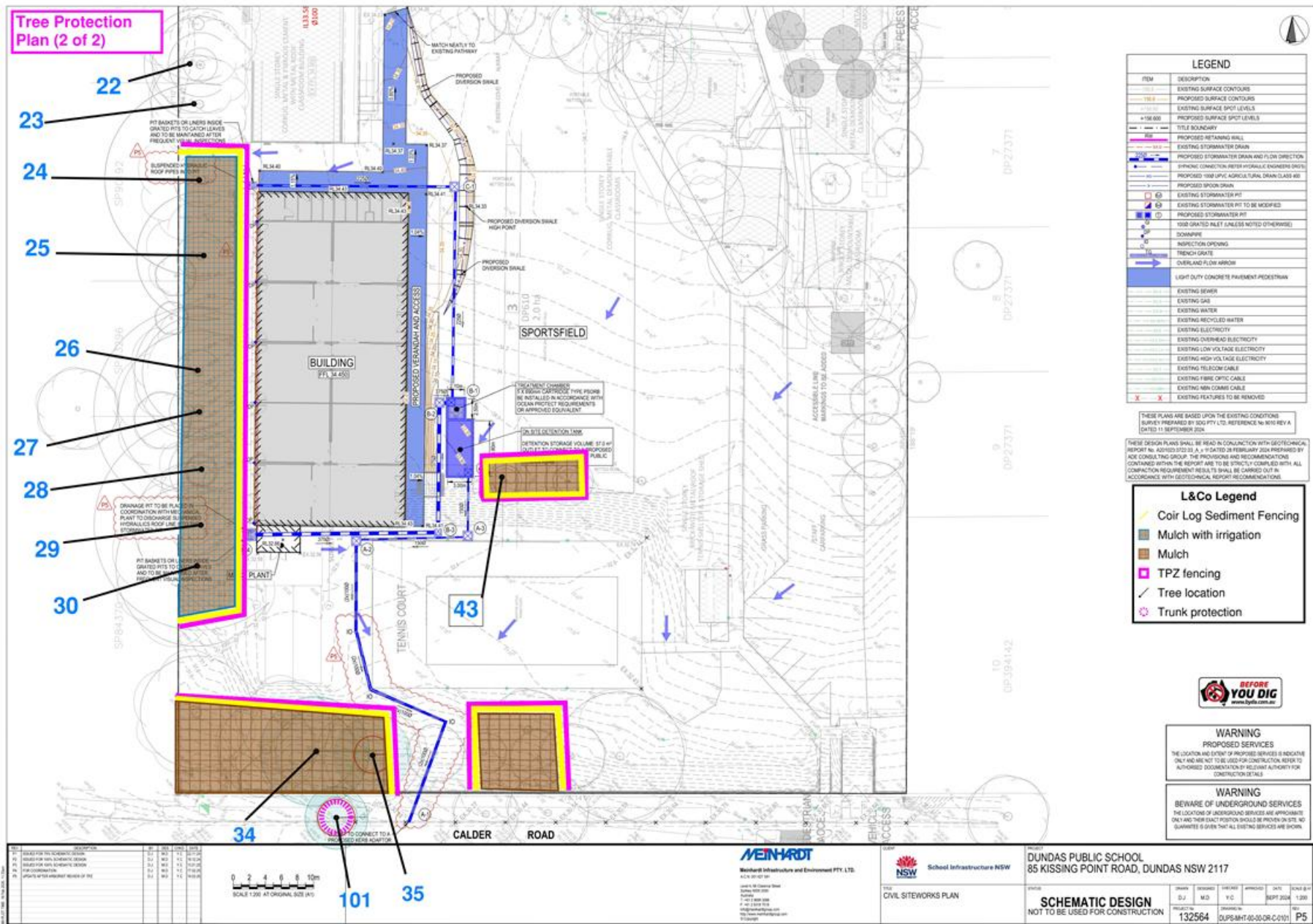


11.0 APPENDIX 6| TREE RETENTION/REMOVAL PLAN



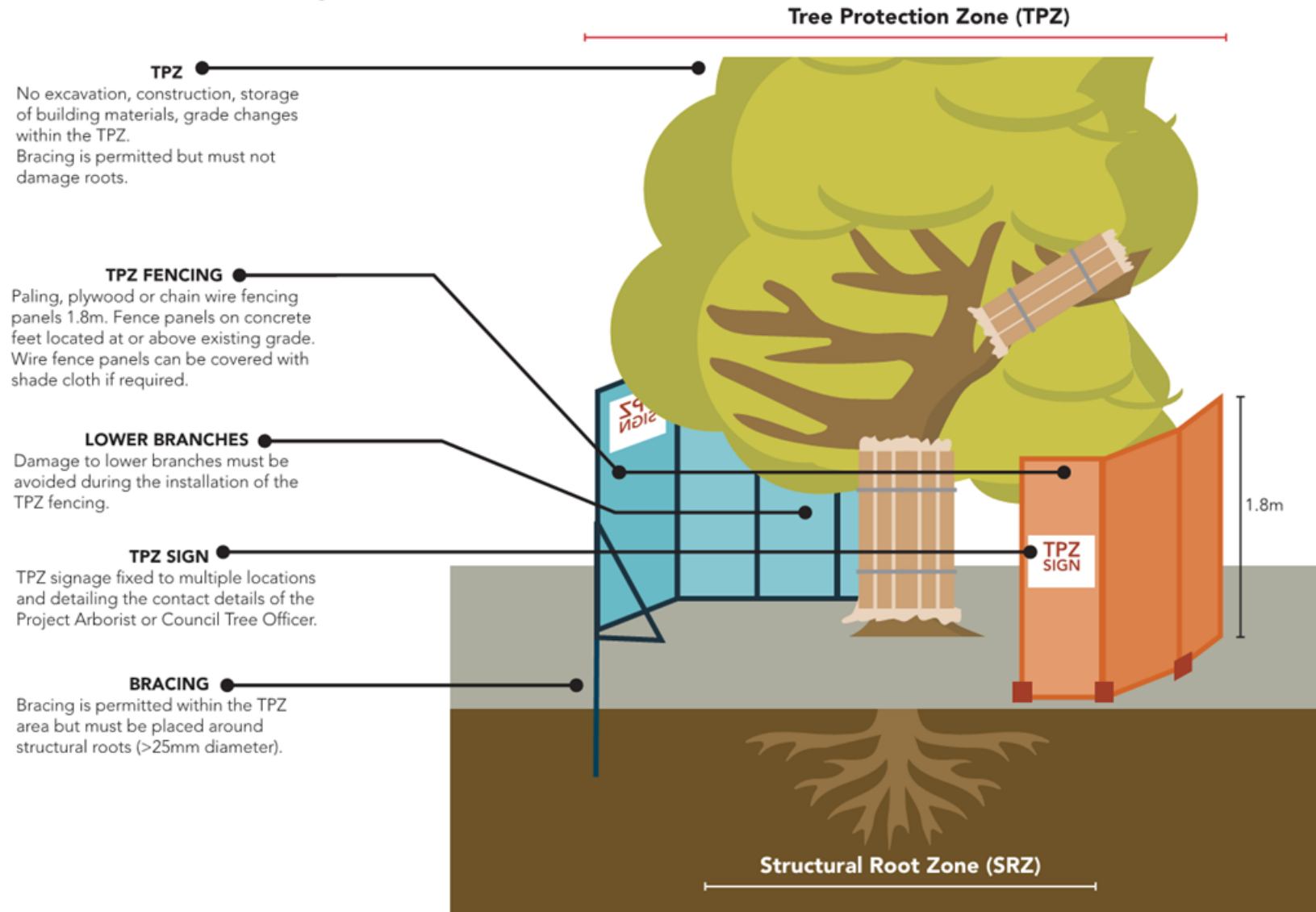
12.0 APPENDIX 7 | TREE PROTECTION PLAN





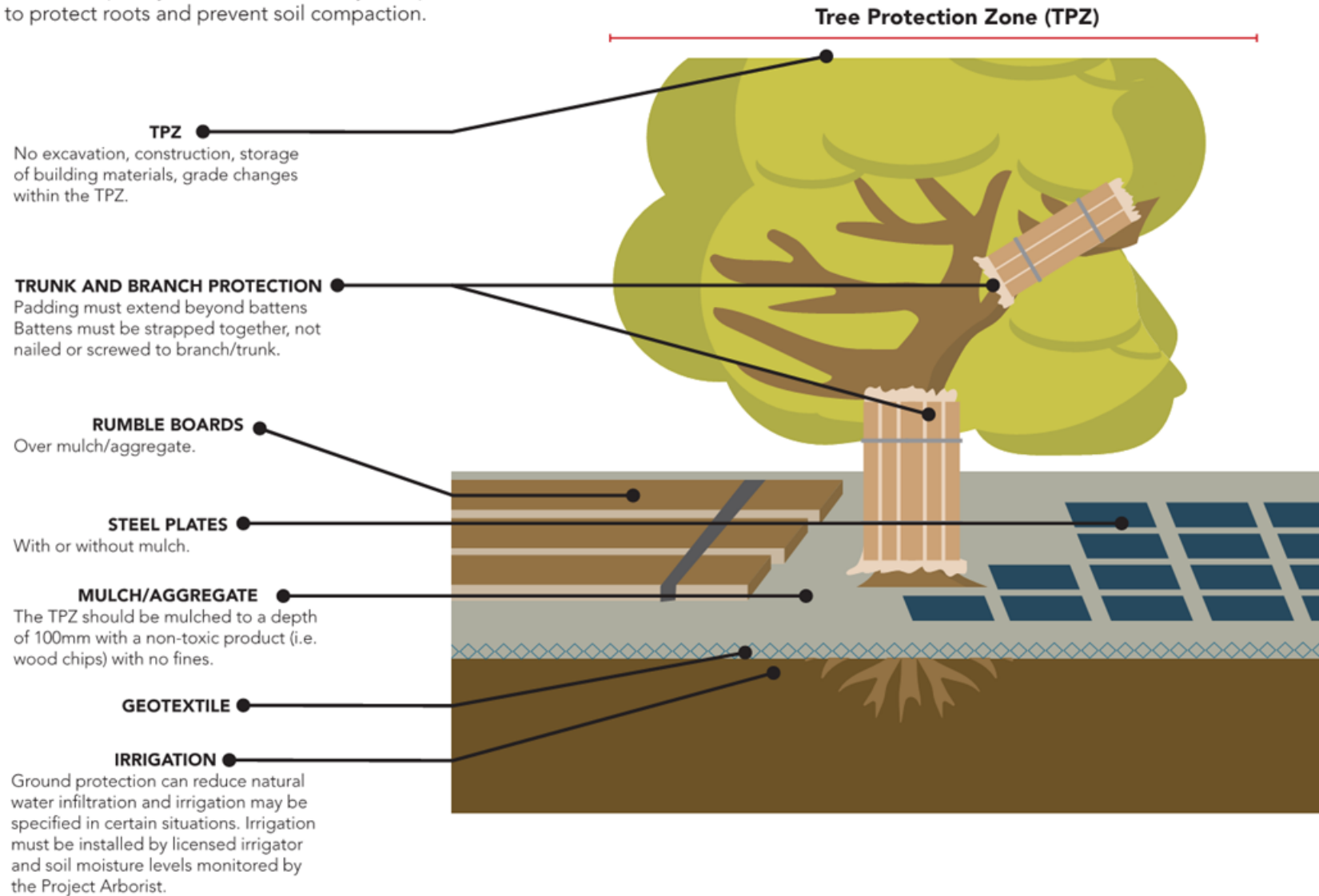
13.0 APPENDIX 8 | TYPICAL TREE PROTECTION DETAIL

Tree Protection Detail - TPZ Fencing

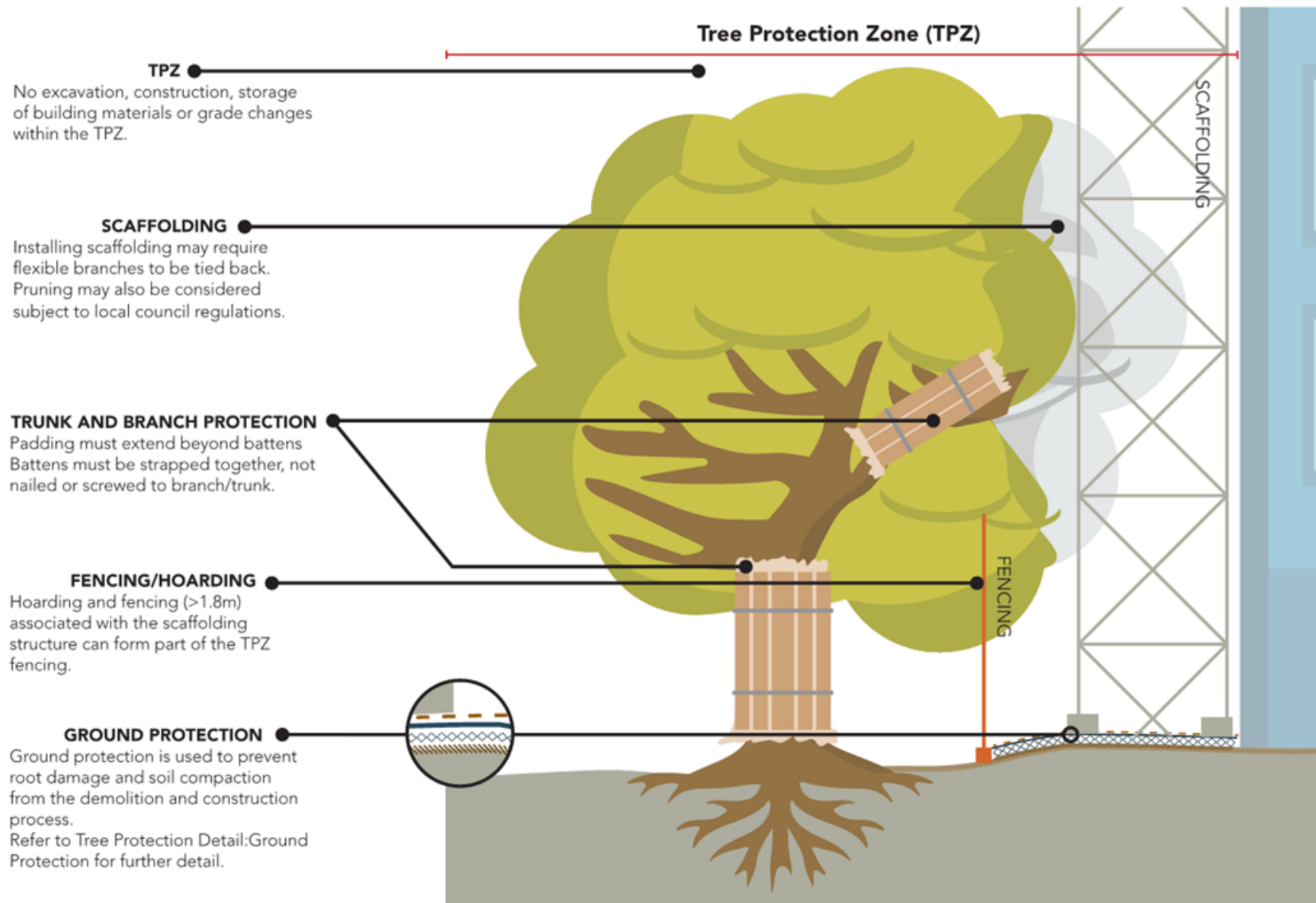


Tree Protection Detail - Ground Protection

Required if temporary access for machinery is required within the TPZ to protect roots and prevent soil compaction.



Tree Protection Detail - Scaffolding within TPZ



14.0 APPENDIX 9 | TREE PROTECTION SPECIFICATION

14.1 Appointment of Project Arborist

14.2 Prior to commencement of works a Project Arborist should be engaged to monitor compliance with the protection measures. The Project Arborist will inspect tree protection measures and prepare a compliance certification for the principal certifying authority prior to the release of compliance certification. Contractors and site workers are to receive these specifications at least 3 days prior to commencing works. Contractors and site workers working within the TPZ should sign the site log confirming they have read and understood these specifications prior to commencing works.

14.3 Compliance

14.4 The Project Arborist will conduct regular site visits to certify the works are compliant with this specification. A compliance document will be prepared by the Project Arborist following each site inspection. The compliance document will include evidence of compliance with the tree protection measures detailed in this specification.

14.5 Tree & Vegetation Removal

14.6 Tree and vegetation removal will be undertaken prior to installation of tree protection measures. Tree removal works should be undertaken in accordance with the *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work* (2016).

14.7 Tree and vegetation removal must not damage trees to be retained.

14.8 Tree Protection Zone

14.9 Trees that are to be retained must be protected prior to and during construction from works that could negatively impact their health and structural integrity. The following works should not occur within the TPZ unless authorised by the Project Arborist:

- Modification of existing soil levels, excavations and trenching
- Mechanical removal of vegetation
- Movement of naturally occurring rock
- Storage of materials, plant/equipment and building of sheds
- No signage or hoarding shall be fixed to the trees
- Preparation of building materials, refuelling or disposal of waste materials and chemicals
- No lighting of fires
- No pedestrian or vehicular traffic
- Temporary or permanent location of services, or works required for their installation
- Any other activities that may damage the tree

14.11 **Tree Protection Fencing**

14.12 The TPZ fencing must be positioned at the perimeter of the TPZ and may be combined to form a single area where the TPZs of multiple trees overlap. The approximate location of the TPZ fencing is outlined in the Arboricultural Impact Assessment with the exact location determined by consultation between the Principal Contractor/Project Manager and the Project Arborist prior to the commencement of works. Fencing may be setback to allow for demolition/construction access and for the installation of pavements only where appropriate ground protection is installed and approved by the Project Arborist. The TPZ fencing must be at least 1.8m above grade and made of wire mesh panels that are supported by concrete feet and fastened together to prevent sideways movement. Tree damage, including any low branches, must be avoided during the installation of the tree protection fencing. The TPZ fencing must include signage to identify the TPZ fencing and include the Project Arborist contact details.

14.13 **Site Management**

14.14 Materials, waste storage and temporary services should not be located within the TPZ.

14.15 Works within the Tree Protection Zones

14.16 In certain situations, works within the TPZ may be authorised by the determining authority. These works must be supervised by the Project Arborist. When working within the TPZ, special care should be taken to avoid damage to the tree's root system, trunks and lower branches.

14.17 If roots (>25mmØ) are encountered during excavation, demolition and construction works, these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mmØ where deemed necessary by the Project Arborist.

14.18 **Ground Protection**

14.19 The movement of machinery should be restricted to existing paved areas or in areas with temporary ground protection (i.e. steel road plates, ground mats) when deemed necessary by the Project Arborist.

14.20 Ground protection should be installed as per AS4970 and Appendix 7- *Typical Tree Protection Detail*.

14.21 If irrigation is considered necessary, it should be installed first and by a licensed irrigator under the supervision of the Project Arborist with no trenching.

14.22 The irrigation should be covered with a layer of geotextile and mulched to a depth of 100mm with a non-toxic product (i.e. woodchips) with no fines.

14.23 Once the irrigation, geotextile and mulch are in place then the ground protection boards (steel plates or rumble boards) can be installed.

14.24 Boards should remain in place for the entire build.

14.25 **Trunk & Branch Protection**

14.26 If trunk protection is required it should be installed by wrapping the trunk and first order branching with padding (i.e. carpet underlay or 10mm thick geotextile) to a minimum height of 2m. Timber battens (90 x 45mm), spaced at 150mm centres should be strapped together and placed over the padding (Refer to AS4970 for further details).

14.27 Branch protection should be installed when considered necessary by the Project Arborist.

14.28 Branches should be wrapped with padding (i.e. Ableflex) to provide protection. Where possible, branches should be tied back and construction works to take place around branches (with appropriate branch protection installed as required). If pruning is unavoidable it should be in accordance with AS4373 and supervised by the Project Arborist.

14.29 **Structure & Pavement Demolition**

14.30 The Project Arborist should supervise the demolition of existing structures/pavement within the TPZ. Machinery is to be excluded from the TPZ unless operating from existing slabs, pavements or areas of ground protection. Machinery should not contact the tree's roots, trunks, branches and crown.

14.31 Existing pavement should be hand lifted to minimise disturbance to the existing sub-base and to prevent damage to tree roots. Wherever possible, the existing sub-base material should remain in situ.

14.32 When removing slab sections within the TPZ, machinery must work from the tree outwards to ensure the machinery always remains on the un-demolished section of slab. Wherever possible, footings or elements below grade should be retained to minimise disturbance to the tree's roots.

14.33 Structures must be shattered with hand-operated pneumatic/electric breaker before removal when considered necessary by the Project Arborist.

14.34 If roots (>25mmØ) are encountered during excavation, demolition and construction works these roots must be retained undamaged and advice sought from the Project Arborist. Exposed roots must be protected from direct sunlight, drying out and extremes of temperature by using 10mm thick jute geotextile fabric. This fabric should be kept moist at all times.

14.35 **Where the Project Arborist determines that the tree is using underground elements (i.e. footings, pipes, rocks etc.) for support, these elements should be left *in situ*.**

14.36 **Pavement/Kerb Installation**

- 14.37 Installation of pavements and sub-base within the TPZ must be supervised by the Project Arborist. New surfaces and sub-base materials should be placed above grade to minimise excavations and retain roots (unless prior root mapping has determined that there are no roots within the area of construction).
- 14.38 If roots (>25mmØ) are encountered during the installation of the new sub-base and surfaces these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mmØ where deemed necessary by the Project Arborist.
- 14.39 Compaction of the ground prior to the installation of fill is not permitted.
- 14.40 New sub-base material should be a 20mm no-fines road base (i.e. Benedict Sand & Gravel- Product Code 20NF/RB or similar). Recycled concrete aggregates should not be used to avoid raising soil pH levels.
- 14.41 If required, bedding sand should be washed river sand (no crushed paving blends). The bedding sand should be consolidated with a pedestrian operated plate compactor only. If possible, pavement material should be permeable.
- 14.42 Kerbs within the TPZ should be modified to bridge roots (>25mmØ) unless root pruning is approved and undertaken by the Project Arborist.
- 14.43 **Underground Services**
- 14.44 The installation of underground services should be located outside of the TPZ. Where this is not possible they should be installed around or below roots (>25mmØ) using either hydrovac or hand excavation and supervised by the Project Arborist.
- 14.45 Boring methods may be used for the installation of services 800mm below grade. Excavations for starting and receiving pits for the boring equipment should be located outside of the TPZ or located to avoid roots (>25mmØ, or determined by the Project Arborist).
- 14.46 Excavations, Root Protection & Root Pruning
- 14.47 Excavations and root pruning within the TPZ must be supervised by the Project Arborist and should be avoided where possible.
- 14.48 No over-excavation, battering, or benching should be undertaken beyond the footprint of any structure unless approved by the Project Arborist. Hand excavation and root pruning along the excavation line should be completed prior to the commencement of mechanical excavation to prevent tearing and shattering damage to the roots.
- 14.49 Roots >25mmØ should be pruned by the Project Arborist only. Roots <25mmØ may be pruned by the Principal Contractor. Root pruning should be undertaken with clean, sharp secateurs or a pruning saw to ensure a smooth wound face, free from tears.
- 14.50 Damaged roots should be pruned behind the damaged tissues with the final cut made to the undamaged part of the root.

15.0 APPENDIX 10 | PLATES



a) Showing examples of Moderate Landscape Significance Trees (Trees 2-4 & 9) growing in proximity to existing built structures. b) Showing Trees 10-14. c) Showing examples of High Landscape Significance Trees (Trees 22-24) growing along western boundary. d) Showing examples of High Landscape Significance Trees (Tree 56-59) growing along western boundary. e) Showing Tree 82 with *Phellinus* bracket on large lesion. f) Showing Tree Group 93 and Trees 94 & 95.

16.0 APPENDIX 11 | MITIGATION MEASURES

Mitigation Number/ Name	When is Mitigation Measure to be complied with	Mitigation Measure	Reason for Mitigation Measure
Improve growing environment	3-4 months prior to construction	<p>Grass/turf Removal. Grass/turf should be removed in the TPZ area to reduce nutrient competition for Trees 24, 27 & 29. The turf must be carefully removed by hand to minimise root disturbance.</p> <p>Increase Organic Matter. A 50mm layer of composted cow manure should be installed over the TPZ area. The cow manure must be free of weeds and plant pathogens.</p> <p>Mulch. The area must then be mulched to a depth of 50mm with Eucalyptus Mulch or equivalent.</p> <p>Irrigation. Irrigation should be considered if the works are to occur over the summer months. Irrigation must be installed by a licensed installer and the rate monitored to insure adequate soil moisture and no water logging</p>	Improve the growing conditions and help offset any root losses from the proposal
Project Arborist	Engage at start of construction prior to CC.	Project Arborist to oversee tree protection measures and ensure compliance	Ensure compliance with tree protection measures to retain trees.
Tree Removal	Prior to demolition	Removal works should be carried out by a practising arborist. The practising arborist should hold a minimum qualification equivalent (using Australian Qualifications Framework) of Level 3 or above in arboriculture or its recognised equivalent. The practising arborist should have a minimum of 3 years of practical experience. Removal works should be undertaken in accordance with the Australian Standard 4373: Pruning of Amenity Trees (2007), Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation and codes.	
Tree Protection Fencing & sediment control	Prior to demolition	TPZ fencing should be installed parallel to the proposed building line prior to any site works (including demolition) and remain in place for the duration of the construction. Coir logs should be installed inside of the TPZ fencing to prevent material runoff into the TPZ. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.	Retain trees and mitigate construction impacts.

		The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition. Refer to AS4970 and Appendices 5, 6 & 7 for further details	
Hand excavation	During Construction	Where possible, electrical trenching should be conducted manually within TPZ area with conduits placed around large structural roots.	Retain trees and mitigate construction impacts.
Replacement Trees	Post construction	Replacement tree planting should be provided when trees are removed. Replacement trees should be supplied as advanced size stock to help offset the loss of amenity resultant from the tree removals. Replacement planting should be supplied in accordance with Australian Standard 2303: Tree Stock for Landscape Use (2015).	Replace the loss of amenity

17.0 APPENDIX 12 | LIMITATIONS & DISCLAIMERS

- 17.1 Subject trees were assessed from the ground only and for providing an Arboricultural Impact Assessment and Tree Protection Specification.
- 17.2 All recommendations in this Arboricultural Impact Assessment and Tree Protection Specification report are based on the observations made on the days of inspection (11.8.23, 15.2.24 & 11.2.25). There is no warranty, expressed or implied, that problems or deficiencies relating to the subject trees, or the subject site may not arise in the future.
- 17.3 Laurence & Co Consultancy takes care to obtain information from reliable sources. However, Laurence & Co Consultancy can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Impact Assessment and Tree Protection Specification report are visual aids only and are not necessarily to scale. This report provides recommendations relating to tree management only. Advice should be sought from appropriately qualified consultants regarding design/construction/ecological/heritage etc. issues.
- 17.4 This report has been prepared for exclusive use by the client. This report should not be viewed by others or for any other reason outside its intended target or without the prior written consent of Laurence & Co Consultancy. Unauthorised alteration or separate use of any section of the report invalidates the report.
- 17.5 Many factors may contribute to tree failure and cannot always be predicted. Laurence & Co Consultancy takes care to accurately assess tree health and structural condition. However, a tree's internal structural condition may not always correlate to visible external indicators.
- 17.6 Limitation of Liability. Laurence & Co Consultancy shall be liable only for direct damages that result from negligence or wilful misconduct in the performance of its services. Under no circumstances shall Laurence & Co Consultancy be liable for indirect, consequential, special, or punitive damages, or for damages caused by the client's failure to perform its obligations under law or contract. Laurence & Co Consultancy shall not be liable for and Client shall indemnify Laurence & Co Consultancy from and against all claims, demands, liabilities and costs (including attorneys' and expert fees) arising out of or in any way related to our performance or non-performance of services, including all on-site activities except to the extent caused by Laurence & Co Consultancy's negligence or wilful misconduct. In no event shall Laurence & Co Consultancy's liability exceed the amount paid to Laurence & Co Consultancy by the Client for our professional services (net of reimbursable expenses) and Client specifically releases Laurence & Co Consultancy for any damages, claims, liabilities and costs in excess of that amount.
- 17.7 Reference should be made to any relevant legislation including Tree Management Controls. All recommendations contained within this report are subject to approval from the relevant Consent Authority.